# American Aviation

MANAGEMENT
ENGINEERING
PRODUCTION
OPERATIONS
MAINTENANCE
EQUIPMENT



# MARCH 1

1954

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Air

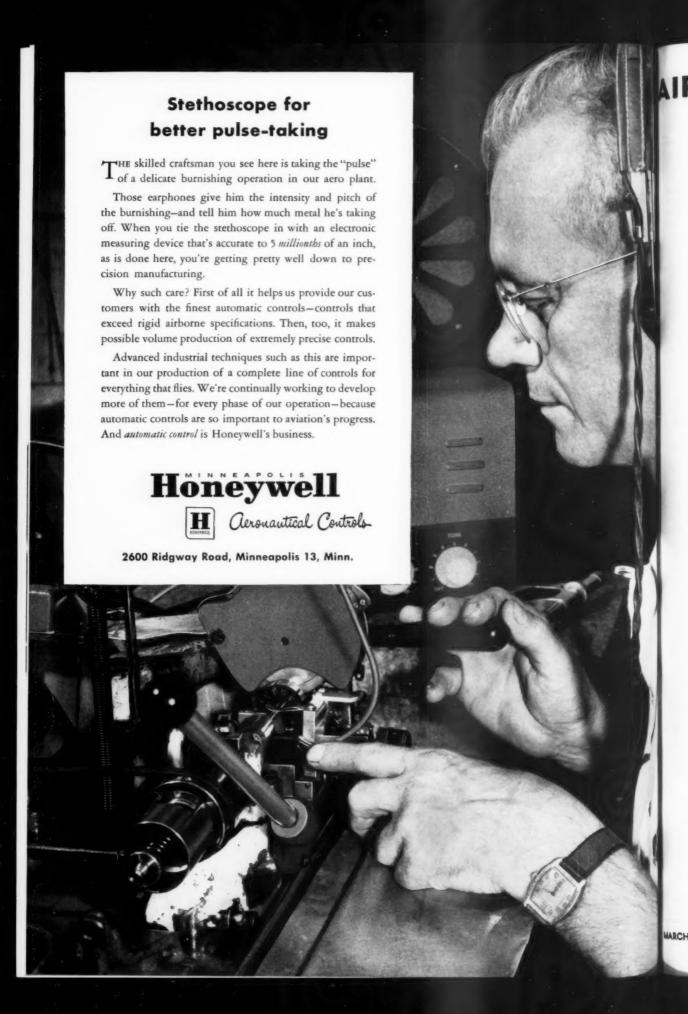
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Japan's	Industry:	
Back in	the Race	 3:

50 cents



Look for military services to reduce the number of letter contracts to a bare minimum, as a step toward placing contractual system on a more businesslike basis.

Many of these contracts, which are preliminary commitments for future purchases, will be terminated if they're a year or more old. Others will be reduced.

Defense Department reasons that, with the Korean emergency over, there's little reason for issuance of letter contracts except for an occasional research or development project.

Army will push for doubling the number of air transport wings in the 137-wing Air Force. Joint Chiefs' plans call for 11, but there are many chances for changes before 137-wing goal is reached in mid-1957, Army believes.

Reduction of Army to 1 million men increases need for airlift, officials claim. It means fighting force of 600,000 plus 400,000 service troops. Army wants to be able to call on AF to airlift 200,000 fighting men and supplies to any point in the world on short notice.

First significant cut in price of titanium has been made by two big producers— Titanium Metals Corp. of America and Rem-Cru Titanium Inc. Reductions (about 12%) are being passed on to customers. High price of lightweight metal has retarded use in aircraft industry.

Principal reasons for cuts: expanding production and continuous mill rolling of titanium sheet. Price of titanium sponge, the raw material, remains the same.

Solution of air traffic control problem is due for top attention in Air Navigation Development Board during fiscal 1955.

ANDB's total program involves a requested \$1 million from Commerce, \$5 million from Defense. Of Commerce money, \$650,000 will be used for traffic control. It's likely that same proportion of Defense funds will go for this purpose, bringing total to \$4 million.

Pay-as-you-go policy may govern any future federal aid airport program.

Subcommittee of Commerce Department Transportation Council favors user charges at federal aid airports, to reimburse government for its expenditures. It added this provision to industry study committee report on federal aid.

Deleted from the report was aid-for-single-runways-only recommendation. Non-carrier aviation favors single runway policy, airlines oppose, CAA is on the fence. Look for a fight if top Transportation Council okays these amendments.

Financial position of Colonial Airlines, not too good now, can become serious quickly.

Big traffic dip in last five months produced losses which cut deeply into earlier profits. Company is in poor cash position to withstand further losses. Inability to plan ahead, because of pending decision in controversial Eastern-Colonial merger case, has hurt Colonial.



# The Saucers Again

Flying saucer reports, which it seems are to be with us forever, have recently been attracting considerably more interest than could be accounted for by military officials. Now, however, the Pentagon definitely attributes the latest rush of saucer reports to Major Donald Keyhoe's book Flying Saucers from Outer Space, which is currently on the fiction best-seller list.

What gives the book a certain flavor of authenticity is the inclusion of what is purported to be an official Air Force letter. It states the Air Force continues to receive a high rate of reports on unidentified objects and that all but 20% can be accounted for. The unaccounted-for portion—usually for lack of sufficient data-has left an area for speculation, upon which Keyhoe has dwelt effectively. The letter, written by an AF underling no longer with the service, has been flagrantly used, however, to promote the book.

The Air Force today is officially refusing comment. Inasmuch as the book had not been submitted for approval, it is being ignored as if it doesn't exist.

## Who Sets the Rates?

An open battle between Congress and PMG Arthur Summerfield is in the offing over alleged "pressure tactics" being used by Post Office to force lower airline mail rates. Heart of the controversy, for the moment, is PO's efforts to reduce rates for four regional trunklines or give their mail shipments to the large carriers with lower rates.

Rep. Carl Hinshaw (R., Calif.) says PO is side-stepping rules and procedures for establishing proper rates set down by Congress and told Summerfield so in two recent, blistering letters. Summerfield, however, has ignored the letters and threatens to implement the PO's new policy against the smaller airlines at

any time.

# Cry 'Wolf'

The recent hullabaloo over Navy Bu-Aer's new security rules for contractors would never have occurred had there not been some irresponsible charges of "censorship." Such was not the intention, Navy claimed, and proved it.

Almost all the material in the Navy instructions is patterned after existing De. fense security regulations, spokesmen said and pointed out that practically all of the text was taken verbatim from Air Force rules. The latter, of course, have the aircraft industry's complete approval.

Actually the whole row, when boiled down, was nothing more than a personal feud between a publication and a Navy officer the publication is trying to have transferred for

alleged lack of cooperation.

# ... Into the Fire

Francis D. "Flip" Flanagan, who resigned as chief counsel for Sen. Joe McCarthy's Government Operations Committee to join the Washington staff of W. R. Grace & Co., stepped into his new job to be confronted with a myriad of critical issues. Not the least of these is the Justice Department's recent antitrust suit against the Grace Co., Pan American World Airways and Panagra, which is jointly owned by Grace and Pan Am. It's a case in which the government charges that the three companies, through agreements with one another, have monopolized air transportation between the U.S. and Latin America.

Thoroughly familiar with the Washington scene, Flanagan was an FBI agent before he became an investigator for the old Truman Investigating Committee. He had stayed on over the years even under various changes of committee leadership. Closest call Flanagan had was when Sen. Owen Brewster took over in the 80th Congress. There was to have been a clean sweep of the Committee's staff but Flanagan was kept on by William P. Rogers, the new counsel appointed by Brewster. Today, Rogers is U. S. deputy attorney general, No. 2 man in the Justice Department.

# **Smathers Wants Answers**

Sen. George Smathers still intends to delve into the question of why the military services are hanging on to airports which they apparently don't intend to use, although he has not formally requested the "full investigation" that had been promised.

The Florida Democrat's original idea was to introduce a resolution to authorize a probe by the Senate Commerce Committee. He is a member of the group's aviation subcommittee. However, the Senator was advised by the Parliamentarian that any such proposal would have to be referred to the Armed Serv-

ices Committee and not his own.

Rather than have that happen, Senator Smathers withdrew his request and will now simply have the question raised within the Commerce Committee anyway. He accuses the military of a "dog in the manger" attitude toward many airports over the nation and thinks that a number of the facilities could well be turned back to nonmilitary control.

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MARCH 1, 1954

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S. HUNTER .....London, Transport



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#### March 1, 1954

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#### OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry. \$200 per year. Managing Editor: Keith Saunders. American Aviation Directory: twice yearly listing of

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merican Aviation Birectery; twice yearly listing of products, people and organizations, \$7.50 each. Beanaging Editor: Marion E. Grambow. Beanaging Editor: Mondals bublication of siring the state of the state o

American Aviation Traffic News (incorporating Air Tariff Reports): Daily rates and tariff news. \$150 per year. Managing Editor: Wallace I. Longstreth.

## When & Where

March 5-7—Society of Women Engineer National Convention, Mayflower Hotel Washington, D.C.

Mar. 22-25—Institute of Radio Engineer National Convention, Waldorf Astor Hotel & Kingsbridge Armory, Ne York.

Mar. 29-31—Aero Medical Assn., 25th annua mtg., Statler Hotel, Washington, D. C.

Apr. 5-8—American Management Assn., 2x National Packaging Exposition, Convention Hall, Atlantic City, N. J.

Apr. 12-14—Airport Operators Council, 74 Annual Meeting, Tampa, Fla.

Apr. 12-15—Society of Automotive Engineer Aeronautic Meeting, Production Forum & Aircraft Engineering Display, Statler Hotel, New York.

Apr. 19-20—Symposium on automatic production of electronic equipment, sponsored jointly by Stanford Research institute and USAF, Fairmont Hotel, San Francisco, Calif.

Apr. 21-24—2d Annual Student Paper Competition sponsored by Institute of the Aeronautical Sciences, Texas Section Adolphus Hotel, Dallas.

Apr. 22-23—Radio Technical Commission for Aeronautics, Franklin Inst. Laboratories, Inst. of the Aeronautical Sciences (Philadelphia Section), & Inst. of Radio Engineers (Phila. Section), Joint Meeting, Franklin Institute, Philadelphia.

Apr. 22-23—American Inst. of Electrical Engineers, conference on feedback controls, Claridge Hotel, Atlantic City, N. J.

April 27-28—Air Traffic Conference, semiannual meeting, Algiers Hotel, Miam Beach, Fla.

Apr. 27-29—Aviation Lighting Committee Illuminating Engineering Society, technical conference Milwaukee, Wa Details from R. J. Stefany, Westinghouse Lamp Div., Bloomfield, N. J.

Apr. 29-30—American Society of Tool Engineers, 10th biennial industrial exposition, Convention Center, Philadelphia

May 5-7—3d Int'l Aviation Trade Show, sponsored by Aircraft Trade Show, Inc., 71st Regimental Armory, New York.

May 7-8—National Convention & Air Meet. National Inter-Collegiate Flying Assn. University of Illinois, Champaiga-Urbana, Ill.

May 10-12—Institute of Radio Engineer. National Conference on Airborne Eletronics, Dayton Biltmore Hotel, Dayton, Ohio.

May 16-19—American Association of Airport Executives, National Convention, Standiford Field, Louisville, Ky.

#### INTERNATIONAL

Apr. 5-6—Society of Plastics Industry (Canada) Inc., 12th annual conference, Mount Royal Hotel, Montreal.

Apr. 10-13—German Air Show, Rhein-Main Airport, Frankfurt, Germany.

Apr. 21—ICAO Conference on coordination of air transport in Europe, Strasbourg, France.

Apr. 26-May 8-IATA Technical Conference, Barcelona, Spain.

Barcelona, Spain.

May 11—ICAO Special Communications mtg.

Middle East Region, location to be an-

nounced.

May 12-14—Engineering Institute of Canada.

Annual Meeting, Quebec.

May 31-June 11—Canadian Internations!
Trade Fair and National Air Show.
Toronto.

June 1—ICAO Assembly, 8th session, Montreal.

June 15—ICAO Meteorological Division, 4th session, Montreal.

MARCH

# 10 reasons for using SKYDROL

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Actual Extracts From Official Accident Reports Show How Hazardous Flammable Hydraulic Fluids Can Be

- 1 Landing gear suddenly retracted on takeoff run. Plane skidded 2450 feet. Fire
  started in No. 3 nacelle, was extinguished
  once, broke out again. Second shot put
  fire out permanently. Fire was caused by
  the ignition of hydraulic fluid escaping
  through a hole worn in the strut by
  friction on the runway. Fluid was ignited
  by friction heat. Fire was subsequently
  fed by hydraulic fluid escaping from
  broken brake lines on the right strut.
- 2 Failure of rear bearing of cabin supercharger drive shaft dislocated shaft guard in Zone 2, which broke hydraulic pump case drain line. The freed hydraulic fluid was ignited by the hot failed parts.
- Exhaust stack came off and exhaust burned through cowl flap, actuating hydraulic line and setting fire to hydraulic fluid.
- 4 Generator lead through stud in cabin bulkhead short-circuited in flight and set fire to hydraulic-fluid-soaked cabin insulation. Cabin filled with smoke, making landing maneuver difficult. Crash and crash fire resulted.
- 5 Failure of supercharger drive-shaft bearing allowed universal joint to rub through housing and cut hydraulic line directly above it. Fluid ignited on hot friction-heated metal. Nacelle burned loose and fell from airplane within 5 minutes.

- 6 Evidence indicates that the engine cowl flap hydraulic line failed when the flaps were opened for taxiing and that escaping fluid was ignited by engine torching or from contact with the hot exhaust manifold. Fire was extinguished by ground fire-fighting equipment.
- 7 Cargo airplane. Pilot completed landing, opened cowl flaps and while taxiing, noticed that right engine was on fire. Hydraulic line to the cowl flap cylinder failed.
- 8 Ground fire. Failure of flexible hydraulic line released hydraulic fluid when cowl flaps were operated.
- Ground fire. Fire started in right nacelle during run-up. Apparently caused by cowl flap hydraulic line grommet failure which contributed to failure of line. Ignition believed caused by exhaust manifold.
- Ground fire. Excessive wear of brake friction-plate allowed the hydraulic pressure seal to release hydraulic fluid on the brake drums which were hot from several successive landings. Drums were hot enough to ignite the hydraulic fluid.

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# Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N. W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

#### COST OF TICKETING

To The Editor:

The editorial in the Feb. 1 issue of AMERICAN AVIATION, based on the address of Mr. Wayne L. McMillen to the SAE annual meeting, was very interesting and of great importance in today's problem of rising costs. Reading this as a travel agent, however, and noting that Mr. McMillen is a top executive of American Airlines, it would appear that the airlines would like to "have their cake and eat it as well."

Mr. McMillen correctly points out that their cost in having a ticket agent make a reservation and issue a ticket is \$1.20. He is therefore very concerned about the fact that these reservation and ticketing costs absorb almost 9% of the price of a New York-Boston ticket.

We can assume without too much strain on belief that the average travel agent would have to calculate his cost of providing the same services as a minimum of the same \$1.20 and probably much more. (The average agent spends more time with the client, giving a more personalized service, and the person handling the reservation is generally a higher salaried employe than the usual airline clerk). But these very same airlines, including American Airlines, are asking the CAB to limit agents' commissions to \$1.50 on a single ticket and \$3.00 on a return ticket.

Thus, while the airline admits that it can make sufficient profit on its long haul routes to cover the necessary losses on its short haul routes, it asks the travel agent to promote the airline's services, make reservations, issue tickets, comply with all its rules, regulations, and red tape, but limit himself to a remuneration which the airline apparently admits is a losing proposition.

If the action of the airlines is not in the public interest, as is contended by the American Society of Travel Agents, then their complete policy has to be examined in relation to the public interest before we shed too many tears over their short haul economic difficulties

M. HEIFETZ

Dominion Travel Office 68 Wellington Street West Toronto, Canada

#### RUSSIAN SUBMARINES

To The Editor:

As indicated in your "Military Commentary" by Cy Caldwell, the Soviets' impressive and growing submarine fleet and its serious threat to sea transport in time of war also make an excellent case for air movement and air supply, as you well know.

I am sure that those responsible for the security of our nation recognize the important role of air transportation. However, it has not been made clear just what means will accomplish this important role, nor any justification of the effort involved. A definite official pronouncement clarifying this whole question would be reassuring and I hope that one is forthcoming. Needless to say, your analyses a stimulating a great deal of serion thought and discussion on this subject to the same and the subject to the same and the same a

LESTER D. MORRISON 2813 Georgetown Street

Palo Alto, California

# HOW TO WIN FRIENDS . .

To the Editor:

My wife and I flew our Bellanca New Orleans between Christmas a New Years.

On that trip we stopped at Mempi Tennessee, for gas. As we taxied ward the tower I could see a linem already waving to me in front of Dixie Air Associates hangar and murally I turned toward him and parthe plane as indicated. The man very polite and after determining needs informed me that the restaum in the administration building was we good.

We walked over to the administration building and enjoyed an excellench. Upon returning, I went to a flight office and received courteous, a service. On returning to the plane, a found a clean coco mat to wipe a slush and dirt from our shoes.

On the throttle there was a custating "Thank you for the opportuni of serving you, your tanks were fill your oil was checked, your windshie was washed, your landing gear check visually, your fuelcap, oilcap, and or are secure, your ash trays were emptidalso two packets of large size match were supplied for the plane.

Needless to say, we both we





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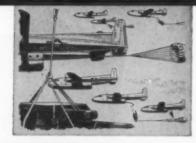
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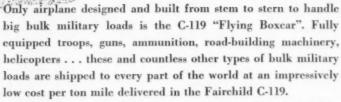
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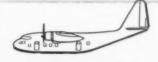




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- OPTICAL PARTS AND DEVICES
- MINIATURE AC MOTORS
- RADIO COMMUNICATIONS AND NAVIGATION EQUIPMENT

Current production is largely destined for our defense forces; but our research facilities, our skills and talents, are available to scientists seeking solutions to instrumentation and control problems.



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pleased and impressed.

On our return trip from New o leans we naturally stopped again, this time requested overnight as modations. Shortly thereafter I modations. Shortly thereafter I handed a small business card with hotel name, and the phone number the weather bureau, Memphis n Memphis tower and airline limou service, all imprinted as an accommodation service to the transient pilot

All this and more too, for when I rived home and at my office I found letter from Mr. Dal C. Miller, presid and general manager of Dixie Air a sociates, Inc., thanking me for my bu ness and asking if there were any gestions I could give him to improve service.

As a member of AOPA, CAP, at other organizations, I feel that the people should get a hearty pat on a back, because they are sincerely held civil aviation today, and we need m like them.

L. O. THERRE

Freeport Silo Co. Freeport, Ill.

#### CORPORATE DATA

To the Editor:

Your column ("Extra Section." Lois Philmus, February 1) was read w deep interest by all of us here. I very interested in . . . a few statis on corporate aircraft. I would very m like to get a list of such aircraft own and was wondering if you could d me to the correct source?

Thank you for your kind attents
OWEN D. WINDALL

American Pilot Products P. O. Box 41 Orange, N. J.

# **Books**

IDEAS AND WEAPONS, by 1. B. H

ley, Jr. Published by the Yale University Press, New Haven, Con Price \$3.75. 222 pages.

A carefully annotated and dos mented study of World War I air powexperiences, substantiating the author case that "new and more effective properties and control of the case that "new and more effective properties have generally been adorded. weapons have generally been adopt slowly in spite of their obvious vantages.

Holley, assistant professor of h tory at Duke University, suggests the careful analysis of the past difficult in introducing new weapons and to development of doctrines for their may prevent the United States from disastrous errors in dealing with the weapons of the future.

DISCONTINUOUS AUTOMATI CONTROL, by Irmgard Flugge-Lat

Princeton University Press, Princeton, N. J.; \$5.00; 168 pp.
On-off automatic control system are often used, but the complex prolems involved in predicting their effects on the system being controlled has made some engineers shy away from them. The author, who pioneered in the field in Germany, and who is now pursuing her work at Stanford University offers graphical solutions which can

used instead of tedious and complicat mathematical computations. . . WAK New 0 gain, and accompany with a umben nis m limou accommendation pilot, hen I se I found [-]-[-]-] preside my b any a prove h CAP, a t on the ERRIE tion," | ead wi t own ld din ttenti ALL B. Holade Uni i docu-ir power authori effective adopted ous ad-Unit construction means either simultaneous transmiswilcox sion on a number of frequencies or selection of single of hists that ficulties and the neir we es from ith the channel best suited to your communication problem. 96 Series 125-525 kc/s...2400 watts. 2-26 mc/s...2500 watts. Meters, transformers, capacitors are hermetically sealed TRANSMITTING for failure-proof performance. STATION Write today for complete specifications. WIL MATIO ge-Lots Prince systems probreflect
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ATIO

# **EDITORIAL**

# Total War Obsolete?

Have AIR POWER and the atom and hydrogen bombs made total war obsolete?

One of the world's more articulate spokesmen for air power believes so. He is Sir John Slessor, Chief of Staff for Britain's Royal Air Force from 1950 to 1952.

Total war is a thing of the past, Sir John said recently over a BBC program, "so long as we never lose our senses and try to 'abolish' the atom bomb," and so long as top priority is given to a powerful air striking force.

Here is indeed a challenging concept, one which

W. W. P.

finds its origins in the evolution of the aims and objectives of war itself. As he related to his radio audience, the old sequence of war is over. When a country used to want something it first resorted to diplomacy, followed thru with economic pressure, and then

force. A country only took the initiative when it thought it could win.

The last two world wars have proved how little was to be gained by winning when the conqueror had to aid the loser, Sir John said. Therefore, the modern conception is that there is no point in going to war unless existence can be made more favorable than before.

The atom and hydrogen bombs have made it impossible to wage a major war without utter devastation. There is no antidote for them, he says, and hence total war has become an obsolete conception.

The only real defense, as every air power advocate knows, is the *means to deliver* the atom and hydrogen bombs into the industrial heart of enemy territory. This means of delivery, of course, is really potent air striking force in constant readiness.

# 1 = 1,000,000

If you want something to ponder over these days, just keep reading this.

C. R. Smith, president of American Airlines, has been endeavoring with considerable success to hammer home to audiences the fantastic development of destructive power since the last war. He gave the following illustration to a

Los Angeles gathering recently:

"Four megatons is equivalent to four million tons of TNT. Four megatons is, therefore, equivalent in destructive capacity to one million bombers of the World War II variety, each transporting four tons of TNT.

"If you and I were to stand out in the open, watching one million bombers passing overhead, at the rate of one hundred each minute, we would be on our feet, looking at the sky, for one hundred and sixty-six hours, or nearly a whole week, before the last of the column flashed overhead. That, my friends, is the meaning of the power of a

single thermonuclear weapon-a small one."

Question: How much of the thinking and planning in the Pentagon is geared to a full recognition of the destructive thermonuclear power now available?

# **Bargains**

An airline announcement the other day gave u quite a jolt. A pleasant jolt, we might add, in these day

of high prices

Willis Lipscomb, v.p.-traffic and sales for Pa American World Airways, announced that when tours services are launched on the Pacific April 1, the new less fare for circumnavigating the globe by air, with stopone privileges en route, will be approximately \$1300, as con-

pared with the first class fare of \$1700.

A \$1300 round-the-world air fare strikes us a being a rather startling bargain. It is also a tribute to the air transport industry for constantly reducing prices in the face of rising costs. Right after the war in 1945 the one way air fare from New York to Ireland alone was \$520. Now, less than ten years later, the thrift-season round-in fare from New York to London is \$425 and an entire global trip is well within the range of the most optimisting dreams of airline traffic men of a relatively few years ago

Even if coffee is high, air travel is lower than ever

# More Bargains

Buried in TWA's recent meaty report to the his Coordinating Committee were some figures which need widespread attention. We submit they are nothing show of sensational.

Airline fares have actually decreased in terms of the 1942 price index while all other transport fares in the U.S. have risen. The index of 1952 transportation prices using 1942 as 100, reveals:

Railroad commutation fares	176.4
Railroad coach fares	142.9
Railroad Pullman fares	139.6
Bus fares	123.0
Airline fares	94.7

In the face of costly equipment expansion program and steadily rising costs, this record of fares is quite exceptional to the trend not only of other transportation mediabut of all other products and services.

TWA then adds another fact which Postmaster General Summerfield, the CAB and Congress might we study. By this same 1942 index, railroad mail rates have jumped upwards to 190.0, while domestic trunk airline main rates dropped to 52.6. This is truly an astonishing achievement and not generally appreciated by the various government agencies involved. One might even say that no other product or service in the entire country can point to record equally as good.

... WAYNE W. PARRISH



Today's most powerful deterrents against aggression are the airmen and officers of the Strategic Air Command and their global B-36's. No combination of men and machines - by their mere existence - has ever been such a force for peace!

To build this team, Convair and the United States

Air Force developed production and training techniques unequalled in the history of aviation. From the beginning both the B-36 and its crews had "growth potential" designed into them. And instead of obsolescence, the atomic age made this team even more formidable in national defense.

Like the Air Force itself, Convair's goal is to achieve the maximum degree of performance . . . the Nth degree of air power . . . Engineering to the Nth power

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# he electronic auto pilots in us

on American-manufactured, scheduled, commercial carriers in world-wide operation

63%

# are Eclipse-Pioneer

Look at the facts for the answer to which auto pilot is best. On world-wide, scheduled, commercial carriers of American manufacture . . . where profitable operation is a "must" . . more than 6 out of every 10 electronic auto pilots are Eclipse-Pioneer. Back of this long-time preference stand these very sound reasons:

• Eclipse-Pioneer is first in electronic auto pilot experient. E-P not only produced and installed the first all-electric auto pilot on a commercial plane, but has continued to show the way ever since in auto pilot design, development, and manifacture . . . including production and delivery of thousand for military aircraft.

• Eclipse-Pioneer auto pilots suit a wide range of aircreft. They're used on every type plane from jet fighters to 4-engine transports . . . including executive and new, long-fuselage high-performance aircraft.

• Eclipse-Pioneer auto pilots also offer Flight Path Control (automatic approach). The addition of FPC provides the complete all-weather answer to automatic approaches and to cross-country flying on VHF omnirange. Three airlines are already flying with FPC . . . a number of others are flight testing it . . . and 56 transport-type aircraft employed in flight-checking all ILS approach installations throughout the continental United States and its possessions are equipped with the full system.

The leadership enjoyed by E-P Auto Pilots is a tribute to the engineering genius and specialized facilities that are so distinctively Eclipse-Pioneer.

\*Eclipse-Pioneer Auto Pilots have also been specified for certain foreign-built new transports.

# Eclipse-Pioneer TETERBORO, NEW JERSEY - DIVISION OF Bendix

ROPPULL

West Coast Office: 117 E. Providencia, Burbank, Calif. Export Sales: Bendix International Division 205 East 42nd St., New York 17, N. Y.

#### PRECISION PRODUCTS\* MADE BY ECLIPSE-PIONE

Airplane and English Instruments
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Sand, Permanent Mold and Castings of Magnesium and Aluminum

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# **Industry Spotlight**

- Interest in the by-pass or ducted fan engine is growing at a fast rate in this muntry. Look for early development of specific arrangements to license the Rolls-Royce (noway here or build a U. S. design. Westinghouse has inside track with Rolls-Royce, fagine could be used for specialized applications, such as vertical take-off aircraft and bundary layer control systems, as well as long range bombers and transports.
- Evidence is accumulating that the really high-powered jet engines for the next and of fighters and bombers may be single-spool engines. This is particularly true in tembers, where a single-mission role will permit the aircraft to cruise at a speed which all eliminate the need for high mechanical compression (ram compression will be adequate) and thus do away with need for double compressor.
- First production Vickers Valiant jet bomber is almost ready to be flown from weybridge factory airfield to the production test field at Wisley. Operating at low weight, the Valiant can take off from Weybridge using only part of the 3864-trunway. First squadron is scheduled for fall.
- Air Defense Command has started experiments using Minnesota Mining and Metal Company's Scotchlite tape for improving aircraft visual identification. Test is under way at Peterson Field, Colorado Springs, Colo. Regular identification numbers are painted on a large sheet of tape which was then applied to the vertical stabilizer. lackheed T-33 was used in interception tests to determine visibility. Numbers on the Sotchlite-marked C-47 were clear at 300-500 feet; normal markings were not.
- Japan's Mitsubishi Heavy Industries, Reorganized, has designed a small lowwing, tricycle-geared jet trainer plane. Designated the JTM1, the Mitsubishi plane would be powered by a 2,000 pound thrust engine, presumably the one now in protompe construction by the Nihon Jet Engine Company. Plane would gross 6975 pounds. It is a side-by-side trainer.
- The importance that the Japanese aircraft industry is placing on missile work is emphasized by review of The Society of Japanese Aircraft Constructors meeting shedule during the past year. Program included five guided missile meetings as compared with one on machine tools, two on materials, etc.
- Productionizing of the Canberra B-57 jet bomber by The Glenn L. Martin Co. has been so successful that, despite British labor costs—which are only one third those of the U. S.—the actual cost of the plane to the USAF will be about the same as English Electric's version. Actually the British and American versions are being built in about the same numbers, but the Martin production rate is about 2½ times the British, which justifies more extensive tooling.
- Boeing Airplane Company's announcement that it has produced 500 Stratofreighters came as a surprise to the industry which had no idea the 175,000 pound masport was being produced in such large numbers. Production record of the many variations of the C-97, including tankers and freighters, has been very good with onsekedule deliveries from Boeing's Renton, Wash, plant for the past 54 months except for the single month of December, 1950. First XC-97 was built in 1944. Fifty-six commercial passenger Stratocruisers add to the plane's total production.
- First shipment of American military aircraft to the French forces in Indo-China consisted of 12 Douglas B-26's. Additional planes will be sent soon, but the Far Eastern Air Force, which is handling the transaction, has declined comment on total numbers involved. There have been reports that the 250 "mechanics" sent to Indo-China to give technical assistance are actually "flying mechanics" who may end up piloting some of these aircraft.
- A successful yaw damper to cure high-speed "dutch roll" in fighters has been produced by Elliot Brothers (London), Ltd. It has been fitted to some British planes and to the Dassault Mystere IV, SNCASO Vautour, and the SNCASE Baroudeur, the last of which was scheduled to fly on February 16.
- Both Bendix Radio and Narco have begun a series of installation and maintenance classes for distributors of their DME units. Bendix held its first week-long session the second week in February and Narco the week after.
- Willard R. Custer, inventor of the channel wing, has plans to adapt his design to jet aircraft. Meanwhile, he has completed about 12 flights on his current design.
- Second flight of the wingless experimental plane designed by Bill Horton has been successfully completed in Santa Ana, Calif. The first flight in 1952 ended in a trash. The latest test took 20 minutes. The plane is now powered by two 450-hp P&W Wasps instead of the original 220-hp powerplants.
- Except for final assembly, de Havilland of Canada will subcontract all the work on the Grumman S2F which it is producing under license. Company does not anticipate any big hiring program.
- AVRO Canada has dropped its plans to revive the Jetliner and probably won't return to transports.

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# LINEATOR

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Lineator.

The Chance-Vought Cutlass was an advanced design in 1947. It is a leader today. The same is true of Airborne's LINEATOR, which was developed for the Cutlass flight control system. Today, seven years later, there is not another "tee" type linear actuator like it.

The same basic model is used in the latest of the Cutlass series, and in the McDonnell Banshee. Modifications of the LINEATOR are specified equipment in the McDonnell Demon; its Air Force companion, F-101; and the Martin P5M patrol bomber.

Conforming to MIL-A-8064 (USAF), the LINEATOR is most adaptable where light weight and short length, for a given stroke, are desirable features. A ball bearing jack screw enables it to handle 1500 lb. maximum operating load in either tension or compression.

Airborne has set the pace in the actuator field with advanced designs like the LINEATOR. As aircraft configurations change and speeds increase, count on Airborne for more of the same. For information on the LINEATOR and other actuators, see our literature in the I.A.S. Catalog.



HILLSIDE 5, NEW JERSEY

# **B.F.Goodrich**

ESTABL



# New De-Icers work faster to keep wings ice-free

THE RUBBER STRIPS seen around the The RUBBER STRIFF SEEL They are B. F. Goodrich De-Icers. They are made with five wide tubes that inflate and deflate, effectively break off ice on planes like this TWA Constellation.

To give this protection to today's bigger . . . and faster planes, B. F. Goodrich years ago started testing hundreds of De-Icer designs under the toughest weather conditions. This included icing tests in actual service over the north Atlantic. So when the Navy needed special De-Icers for fast fighters for Korea, B. F. Goodrich was able to design, test and produce them in 21 days.

The latest BFG De-Icer development is the one with narrow 3/4" tubes, now

used on TWA and Eastern Airlines Super Constellations. These little tubes inflate quicker with almost three times the air pressure used on earlier types. This breaks off ice cleaner and faster. The rest period between inflating cycles is much longer, cutting down disturbance of the airflow so much it isn't even a factor. This new De-Icer is lightertakes up little space for plumbing.

Airlines report that these De-Icers last twice as long, too. That's because they're molded to fit, simply cemented onto the plane with no stretching, no

First developed by B. F. Goodrich, De-Icers have given the airlines yearround protection against icing conditions since 1930. B. F. Goodrich engineers have the longest, most complete background of experience in the field of airplance ice protection. Let them put this experience to work for you.

Other B. F. Goodrich products for aviation include: tires, wheels, brakes; heated rubber; Avtrim; Plastilock adhesives; Pressure Sealing Zippers; canopy seals; fuel cells; Rivnuts; hose and other accessories. The B. F. Goodrich Co., Aeronautical Division, Akron, Obio.

# B.F. Goodrich

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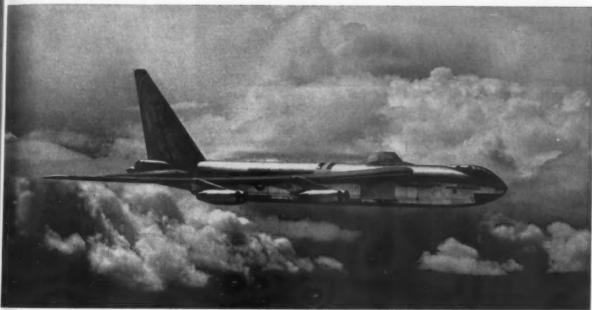
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MAINSTAY of air-atomic striking force will be Boeing's eight-jet B-52.

# Military Backlog Stretches Three Years

Target date of mid-1957 will see monthly output at 500 rather than 300; peaks and valleys leveled.

By ROBERT M. LOEBELSON

THE NATION'S aircraft industry last week found itself in an unprecedented peacetime situation—a backlog of military orders providing enough work for the next two or three years.

For the first time in history, U.S. aircraft and engine builders could look forward to stabilized production while the nation was not involved in either a war or a "police action."

Defense Secretary Charles E. Wilson summed up the situation when he reported at a press conference that the new look by the Joint Chiefs of Staff which resulted in a call for a 137-wing Air Force by the middle of 1957 would bring an end to the feast and famine

to which the aircraft industry has continually been subjected in the past.

Wilson's opinion was backed up by Aircraft Industries Association president DeWitt C. Ramsey when he reported that the building and maintaining of 137 wings would tend to make the industry's ups and downs something which would not be repeated in the future.

But what did the new look mean in terms of individual companies and what would happen after the current goals were attained?

To find out, AMERICAN AVIATION asked one of the top Pentagon authorities on the subject. In essence, this is what he reported:

• By June 30, 1957, the USAF will

have 137 wings of modern aircraft.

- Principal planes in that program will be Boeing B-47's, B-52's, and KC-97's, McDonnell F-101's, and Republic F-84F's for the 55 wings in the Strategic Air Command; Martin B-57's, Douglas B-66's, North American F-100's, F-86H's, and Republic F-84F's for the 34 Tactical Air Command wings; Consolidated Vultee F-102's, Northrop F-89D's, and NAA F-86's and F-100's for the 37 Air Defense Command wings (along with some Lockheed F-94C's); and Douglas C-124's, Lockheed C-130's, Chase-Fairchild C-123's, Fairchild C-119's and Boeing C-97's for the 11 air transport wings.
- By the time the target date is reached, output of all military aircraft will slide from the present 1000 planes a month to about 500.
- After June 30, 1957, the rate of production will depend not so much on

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NORTH AMERICAN F-100 is first of new "100 series" fighters to be finished.

the Air Force but on the industry itself, i.e., how quickly the airframe companies can come up with new designs which will make the above planes obsolete.

• If the industry is not "on the ball," the required replacements due to relatively small attrition will cause the production curve to dip even more. On the other hand, if the companies involved devise better planes, replacements would mean a monthly production rate of 400-500, or just about the same level the plane companies will be at in mid-

• Meanwhile, the Air Force and the other services will slow down requests for procurement money as such in the fiscal 1956 and subsequent budgets (the money to take care of purchases of the planes to be delivered by 1957 appears in fiscal 1955 and prior years' appropriations for aircraft and related procurement).

• Funds for research and development—some of the money actually coming out of procurement—will be stepped up to help the industry (and consequently the services and the U.S.) devise more potent aircraft in next year's (1956) budget.

One often-overlooked point as far as future plane production is concerned involves the various program changes which have taken place since Korea. When the previous Joint Chiel of Staff came up with mid-1954 as the critical year, they urged a 143-wing Ar Force by that time. Had that program been maintained (despite machine modern bottlenecks and other impediments), the aircraft industry would now be just about where it was in July, 1946—far on its back with between 50 and 10 military planes being delivered each month.

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The Truman-ordered "stretchou" which postponed the attainment of H wings until January, 1956, gave the industry some time to catch up and a chance to do some planning. But even that schedule would have meant a monthly production rate of 250-350 at craft by June of 1956.

The latest schedule of 137 wing by 1957 is a further adjustment, by now the airframe and engine companies have additional time to design new aircraft and hope for new orders.

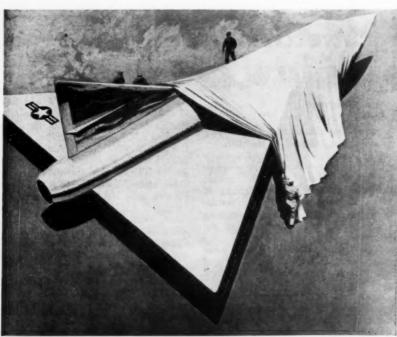
In the meantime, the Air Forcand the Navy Bureau of Aeronautic can re-evaluate their commitments for aircraft scheduled to be in production in 1955 and 1956, e.g., Republic's P-ll and Convair's XB-58. If they should discover that even better aircraft on be ordered for slightly later deliven they can cancel the orders without to great a loss of money due to contract termination charges.

In any current evaluation of the industry's future, AMERICAN AVIATION's source pointed out, there are one international and two domestic 'unknowns. The international question mark, of course, involves the plans in the mind of the masters in the Kremlin. Domestically, atomic power for aircraft and congressional actions will help to determine the production rate of military planes.

Thus, despite the JCS recommendations and President Eisenhower's concurrence, Congress may, within the next few years, decide to sharply cuttail the defense budget, bringing quick end to present plans. Successful atomic aircraft engines might bring a revolution even greater than the caused by the advent of the jet power plant.

As the Pentagon official put it "Ten years ago, in 1944, we wenthinking in terms of a 450-mph Air Force. In 1954, we're talking about supersonic flight. Who knows what the outlook will be in 1964?"

In any event, the best thinking a present is that the aircraft industry peaks and valleys have disappeared Production, earnings, and work force will be down from their present high levels, but they will remain well about the bare subsistence level for the neg five years at least.



STILL UNDER WRAPS is Convair's delta-wing F-102 for Air Defense Command.

AMERICAN AVIATION

# **AA Directors Approve** Organization Shake-up

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A revised plan of organization for American Airlines was approved reently by AA's directors, setting up four principal divisions headed by senior vice presidents as follows: Sales-Charles R. Speers; Operations—O. M. Mosier; Finance—William J. Hogan; and Secretary-Properties-C. W. Jacob.

Reporting through Speers will be AA's five regional sales vice presidents. Under Mosier in Operations will be these v.p.'s: R. E. S. Deichler; L. G. Fritz; G. J. Brandewiede; Marvin Whitlock; and M. G. (Dan) Beard. Vice presidents in the Finance department under Hogan will be Paul G. Larie and Leland Glasgow. Walter H. Johnson, Ir. and Carlene Roberts will report through Jacob.

Three other v.p.'s, Rex Smith, pubic relations, G. K. Griffin, personnel, and William Littlewood, engineering, will report to C. R. Smith, president.

#### duction 's F-10 **Braniff Names Vice** Presidents, Treasurer

Further changes in the management structure of Braniff Airways last month found five new vice presidents dected along with an assistant vice president and a new treasurer. They

C. G. Adams, former secretary and treasurer promoted to vice presidentfinance and secretary; Rex Brack, from general traffic and sales manager to vice president-traffic and sales; R. V. Carleton, from operations manager to vice president-operations.

Also, Malcolm Harrison, promoted from personnel director to vice president-personnel, in charge of industrial relations; Walter M. Henshel, director of public relations, to vice president-public relations; V. A. Kropff, assistant to executive vice president, to assistant

y cur vice president-executive projects; and Oscar Crane, from assistant treasurer to

# Peach Elected Mohawk President

Robert E. Peach, executive vice president and general manager of Mohawk Airlines since 1949, has been elected president and a director of the local line. E. V. Underwood, president since 1950, was simultaneously elected board chairman.

Also, Bertram J. Miner, former board chairman, was named chairman of the airline's executive committee which also consists of T. P. Wright, vice president-research Cornell University and former CAA Administrator, and Charles F. Johnson, Jr., president of Endicott-Johnson Shoe Corp.



TWIN TAIL BOOMS and non-retractable skids mark McDonnell XV-1.

# McDonnell XV-1 Convertiplane Shown

McDonnell Aircraft Corp.'s XV-1 convertiplane, featuring pressure jets and high disc loading, has been unveiled at Lambert Field in St. Louis.

The craft, which uses the "un-loaded rotor principle," i. e., a rotor for vertical flight and wings and propeller for forward propulsion, was developed in conjunction with the AF's Wright Air Development Center and the Army Transportation Corps.

The XV-1, which is not expected to make its first flight until next summer, is designed to carry three passengers, or two litter patients and an attendant, plus the pilot. It is about

30 feet long, 10 feet high, and has a 26-foot wingspan.

Tail assembly consists of two vertical fins and rudders attached to the ends of twin tail booms, while the horizontal surface has a single stabilizer with tabs, mounted between the booms. Landing gear consists of two nonretracting skids.

Each of the three blades of the rotor is fitted with a McDonnell pressure jet located at the tip. The Continental piston engine located on the aft fuselage supplies air to the pressure jet units for vertical flight and power to the prop when it is flying forward.

# USAF Awards \$100 Million in Contracts

Three aircraft companies shared the bulk of more than \$100 million in contracts recently awarded by the US-AF's Air Materiel Command.

• North American Aviation got orders for \$42,164,255 worth of aircraft, spare parts, special tools, and ground handling equipment. Planes involved are probably F-100's.

 Boeing Airplane Co. was given a contract calling for \$25 million in spare parts and another one for \$10 million to modernize 162 B-47B's.

 Consolidated Vultee Aircraft Corp. received an order worth \$17,584,-392 in additional funds to deliver 85

T-29C's, 40 T-29D's, and 26 C-131A's. Other AMC contracts awarded at

the same time included: • \$14,712,000 to the Sundstrand Machine Tool Co., Rockford, Ill., for

2377 constant speed alternator drives. • \$991,000 to The Glenn L. Martin Co. for squadron guidance equipment, spare parts, and engineering changes, probably for the B-61 Matador.

• \$910,000 to Sperry Gyroscope Co. • \$657,800 to Eidal Manufacturing

Co. of Albuquerque, N. M.
• \$438,935 to Bendix Eclipse-Pioneer Division at Teterboro, N. J.

# Army to Stress Cargo 'Copter, Test S-56

Having essentially reached its desired level for fixed wing aircraft, the Army will continue to stress helicopters, particularly cargo rotorcraft, according to Maj. Gen. Paul F. Yount, Army chief of transportation.

Principal helicopter in this area of interest, Yount told AMERICAN AVIA-TION, is the Sikorsky H-37, developed by the Navy for the Marine Corps, which designates this plane as the XHR2S (S-56 is the commercial designation). The Army hopes to have a test quantity (less than 10) of these standard medium helicopters by the end of 1956.

Greatest problem in helicopters still facing the Army, Yount said, is the development of a satisfactory engine with life comparable to fixed-wing aircraft powerplants. Rotorcraft engine life is now about half as long as for fixedwing planes, and repair costs exceed all other elements of helicopter operating costs, he said.

Col. William B. Bunker, chief of the Army Air Transportation Services Div. under Yount, revealed that the Army will soon initiate a design competition for a utility helicopter. Design work is expected to be started during fiscal year 1955, he said.

# U.S. Jet Service by 1957-59 Forecast

The first U. S. built jet transport will enter scheduled passenger operation between 1957 and 1959, according to the Civil Aeronautics Administration's jet transport evaluation team.

The group has submitted a 194page report which included comments

on:

• Initial routes: First cargo, then domestic passenger operations, then overwater operations are predicted;

• Turboprops: These engines may carve out an important place for themselves in cargo, coach, local service, and corporate flying, leaving the lion's share of first class domestic and overwater service for the turbojets;

• By-pass, or ducted-fan, engine: May have considerable promise in high speed operations because of low noise and specific fuel consumption;

• Design: Proper strength of struc-

ture must be available to provide safeguards against turbulence, gusts, and fatigue failures; integrity of pressurization, control system "feel" characteristics, and vulnerability to damage from powerplant failure were also considered;

• Powerplants: Military experience will help in refining designs; attention must be given to greater fire safety, contamination of passenger air supply, propeller reversing on turboprops, provision of about 40% reverse thrust for first U. S. civil jet, water injection and possibly afterburning, and the cost and space advantages of a kerosene-base fuel.

The CAA team does not foresee any significant changes in present airport standards, but traffic control methods must be developed for better separation at high altitudes. Solution to the noise problem in terminal areas must

also be vigorously pursued.

# ATA Attacks Decision to Push DME

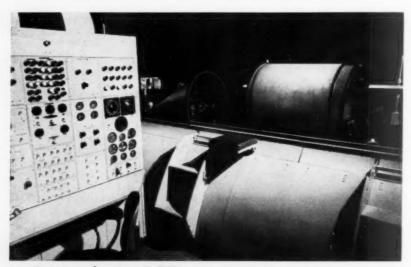
Immediately following CAA announcement (AMERICAN AVIATION, February 15) of plans to complete its Distance Measuring Equipment program, the Air Transport Association in behalf of the scheduled airlines went on record strongly opposing the move as untimely.

Milton W. Arnold, ATA vp of operations and engineering, charged that there is no urgent operational need at this time for DME, adding that it is extremely difficult to see why CAA is going full steam ahead on implementation.

"The value of DME," Arnold said, "when applied in traffic control cannot be realized until some answer is provided to the problem of DME versus TACAN" (military equivalent system being evaluated by the Air Navigation Development Board).

ATA also charged that "large sums would be involved in the installation and operation of DME at a time when completion of the VOR range program is an absolute must, the shortage of traffic control personnel is acute, and there are a number of spots where decommissioning of LF/MF ranges is being considered because of lack of funds.

"Adequate navigational aids, communications, and traffic control personnel are absolute requirements at this time," Arnold said, "yet CAA apparently is ignoring these problems!"



First production F-89D flight simulator has been accepted from Link Aviation by the USAF. "Trouble board" at left. Jump seat for instructor observation is located outside cockpits for pilot and radar operator.

# Arinc Group Picks 5.7 Cm. Weather Rada

Climaxing a year-long controvers over the relative merits of 3 cm, and 5.7 cm. wavelength airborne weather radar, the Aeronautical Radio, Inc. Airlines Electronic Engineering Committee has finally and formally and down its requirements.

At its winter meeting in Washington, D. C., recently, the Committee voted without dissent to rename in radar document "Characteristic No. 52 —5.7 cm. Weather Penetration Air borne Radar System." The move virtually closed the door on 3 cm. equipment as an Arinc-endorsed weather penetration radar for airline use.

The AEEC action was taken despite a strong recommendation by Bendix Radio Div. of Bendix Aviation Corp. that the specification for the radar le made optional as to operating frequency, i. e. 5400 mc. (5.7 cm.), or approximately 9300 mc. (3 cm.). The committee approval now goes before the Arine board of directors for ratification and then to the member airlines for a 30-day approval period.

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Insistence of the airline representatives on the 5.7 cm. radar for the AEEC characteristic is founded on the study of Drs. J. S. Marshall and W. Hitschfeld of McGill University (AMERICAN AVIATION, March 30, 1953) and actual storm probing tests conducted last year by United Air Lines and Radio Corporation of America.

Although the final report of the UAL tests was not available at the recent meeting, the success of these tests was the major factor influencing the AEEC decision.

In other actions during the session, the committee:

Concluded a long-standing project on the development of a new characteristic for ADF receivers (No. 530).
 adopting the document without dissent;

• Made permanent its characteristic (No. 531) for a selective calling system that dispenses with the necessity on the part of flight crews continuously to monitor company frequencies in anticipation of a radio contact (AMERICAN AVIATION, Nov. 9, 1953, p. 37).

Exhibited at the session were two SelCal units, a CAA-certificated unit being produced by Motorola, Inc., and the prototype version of a Bendix Radio Div. SCL-3 system expected to be available in about four months. Both manufacturers have designed ground keying equipment to operate with the airborne receivers.

AMERICAN AVIATION



DOUGLAS YC-124B is powered by P&W's YT34-P-1's and is expected to cruise over 300 mph.

# **Turboprop Programs Begin to Pay Off**

New version of Douglas Globemaster gets year off to fast start: Constellation and C-130 to follow. fication

THE YEAR 1954 promises to be an active one in turboprop development, which heretofore has been dragging its heels because of the greater military interest in making turbojet progress.

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The Air Force's first four-engine turboprop transport plane is now under flight test at Edwards Air Force Base. It's the Douglas YC-124B, a turboprop version of the Long Beach division's giant Globemaster cargo and troop

The YC-124B will serve as a flying test bed for a new gas-turbine engine and propeller combination. The engines are Pratt & Whitney's YT34-P-1's and the propellers are 18-foot, three-bladed, steel Curtiss Turbolectrics.

The Air Force is turning the YC-124B back to the Douglas Aircraft Co. under bailment and the extensive test program will be conducted by the manufacturer.

Two other engine and propeller combinations will follow the YC-124B.

One will be the P & W T34 hooked with Hamilton Standard's threebladed Turbo-Hydromatic propellers on Lockheed's R7V-2 Super Constellation for the Navy. This should be the next military turboprop transport to fly, probably this spring.

The other new combination also is Lockheed's. This is its four-engine Air Force C-130 which incorporates Allison's new T56 turbine connected to Curtiss' Turbolectric prop. The first YC-130 may fly soon after the R7V-2.

Toward the latter part of the year

Lockheed is scheduled to have a T34 turbine-powered RC-121F Super Constellation ready for the Air Force. Boeing also is entering the lists with a turboprop version of its C-97 Stratofreighter. The Boeings will have T34 engines and Curtiss Turbolectric propellers. An additional Allison T56 venture is Convair's turboprop version of the 340.

# No Conversions Scheduled

Although the YC-124B is classified as a prototype of the turboprop version of the C-124 Globemaster, there are no plans for conversion from the P & W R-4360 piston engines in the C-124C's which currently are in production at Douglas Long Beach and are scheduled to continue into 1955.

Neither is it a prototype for a forthcoming new turboprop project at Douglas Long Beach, the C-133, which will be a larger and fully pressurized logistics transport for the Air Force.

Douglas has still another turboprop design project on the fire, the C-132, at its Santa Monica division.

The YC-124B was developed by Douglas for the Air Research and Development Command to derive technical data on the operation of turboprop propulsive systems and to obtain flight experience with large aircraft having turboprop power. It carried no special military priorities and its production was keyed to engine and propeller availability.

Douglas picked a location on its

C-124C assembly line at Long Beach and ear-marked it for the modifications needed to permit the airplane to take advantage of the increased power supplied by the YT34's, which develop the equivalent of 5500 hp at take-off.

Like the C-124C, the YC-124B is designed for an all-purpose transport, including cargo, troops and litter patients. Physical dimensions are basically the same.

To take advantage of the increased power, the structure has been strengthened to permit an increase in the design gross weight to 200,000 pounds, as compared to 185,000 pounds for the design gross of the C-124C, and to permit flight operations at increased speeds. (Figure of 194,500 pounds sometimes used as maximum gross weight of the C-124C is an overload gross, not the design gross.)

Specific modifications include the use of Hy-tuf steel in the main components of the landing gear to compensate for the increased loads. The vertical tail has been increased in size and strength and the horizontal tail has been revised to make use of a new and improved cross section. The general revisions to the tail surfaces provide improved stability and controllability under the new conditions created by the higher engine

Since the YC-124B is to be a test vehicle, only the flight compartment has been reinforced to permit the use of pressurization for high altitude per-

The plane incorporates a pneumatic system designed and built by AiResearch Manufacturing Co., to perform the functions of engine starting, pressurization and auxiliary power. The system consists of a gas turbine com-



LONG NACELLES and larger vertical fin distinguish the YC-124B from the C-124C. Propellers are 18-foot steel Curtiss Turbolectrics.

pressor, an air turbine motor, engine starters and a refrigeration system.

On the ground the GTC unit provides the basic power in the form of compressed air for the operation of the system. In flight the system is energized by bleed air from the engines.

The AiResearch ATM 50-2 air turbine motor can be used either in flight or on the ground as a source of auxiliary power from the generators and hydraulic pump that are mounted on it. The refrigeration unit provides

pressurized and conditioned air for the cockpit at the rate of 20 pounds per minute. The temperature control system is electronic.

Normal propeller control is accomplished through the single level power control to the engine. The propeller system incorporates synchronization, emergency negative thrust control, manual feathering, reversing, and provisions for performing air start.

The synchronizer follows the master motor principle originally developed by Curtiss to control propeller rpm's in piston engine installations. The negative thrust system suppresses the day from a windmilling propeller before it is feathered in flight if the engine power is stopped.

All of the recent modernization

All of the recent modernization features of the C-124C have been in corporated into the YC-124B. Some of these features are: CB fire extinguishing systems with single lever fire control single point refueling; compensated capacitance-type fuel indicating system. "Fire-Eye" fire detection system plus a structural overheat detection system cargo hoists and winching provision for cargo handling; full complement of communication and navigational equipment; thermal anti-icing for wings and tail surfaces.

All performance figures on the YC-124B remain classified, but in provement, of course, cannot help but be substantial in level flight speed, rate of climb and range. It is generally understood that the turboprop engines will enable the airplane to cruise at better than 300 mph.

# PO Lowest-Rate Policy Still Under Discussion

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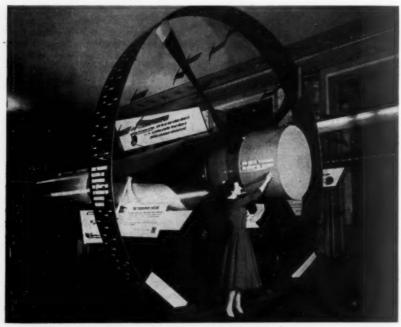
Question of whether the Post Office would ship airmail via carriers with the lowest service rates continued without solution last month. The PO policy was originally slated to begin January 1, 1954, but was delayed by rate differences between the PO, CAB, and the airlines.

It was again slated to start on February 15, but continuation of the rate differences resulted in another post ponement.

Specifically involved are Capital. Delta-C&S, Braniff, and Western who, as 53¢ rate carriers, stand to lose airmal volume and revenues to competing carriers operating at the 45¢ rate. Two CAB rate proposals for those lines have been blocked by PO objections.

First was to lower the rates for the four lines to 45¢ on competing segments and increase the rate sufficiently on non-competitive segments to maintain the overall 53¢ average. Second was to establish the 45¢ rate on a temporary basis on competitive segments and keep 53¢ on non-competitive routes, subject to retroactive adjustment.

Since efforts to resolve the rate differences in an informal manner had failed, CAB set the problem down for formal procedural steps.



AIR MOVED BY TURBOPROP PROPELLER in 1/100 of a second is represented in display by large ring; smaller cylinder represents air taken in for combustion.

AMERICAN AVIATION



AMONG THE NEWEST TRAINERS: Lockheed's replacement for the T-33A (above); North American's two-seater version of the F-86F (below).



# Fight for Trainer Contracts Gets Hot

New developments on half a dozen fronts focus USAF attention on need for new jet and piston models.

AIR FORCE and Navy officials temporarily diverted their attention recently from upcoming fighters and bombers to give some thought to the planes they will need to train the fighter and bomber pilots. Several factors were responsible. Among them:

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• A Lockheed proposal for a replacement for the venerable T-33A/-TV-2 trainer;

• North American Aviation's proposition for a two-seat trainer version of

the battle-tested F-86F;
• Anticipated delivery by Cessna
Aircraft Co. of three experimental twinjet XT-37's this year to the Air Force;

 End of NAA's remanufacture of World War II T-6 piston trainers into T-6G's;

• The Bureau of Aeronautics' trainer competition, originally 14 planes, but now a choice between two reciprocating engine trainers;

 North Atlantic Treaty Organization's requirement for a trainer suiting the needs of several European nations.
 Lockheed, whose TF-80C became

Lockheed, whose TF-80C became the T-33 for the Air Force and NATO and TV-2 for the Navy, has now produced more than 2000 up to the present time. Output under present contracts will carry until the spring of 1955.

But the Burbank company is well aware that the T-33A cannot go on forever (even though the F-80/T-33 line has been continuous since 1945) and has consequently put \$1 million into a successor which carries the company designation L-245, but which is more commonly known as the "T-33B."

#### New Ideas

Lockheed describes the new plane, which made its first flight last December 15, as a 600-mile-per-hour craft which retains the basic design and many of the features of the T-33A but incorporates new ideas for advanced training. Among them:

training. Among them:

• A raised rear seat, boosted six inches to give the instructor a grandstand view of the student and also to improve visibility when he is handling the controls himself.

A deceleration drag parachute;

 Duplicate navigational and electronic aids, including a Bendix glide path receiver, an RCA localizer VOR receiver (replacing the radio compass), and a Sperry Zero Reader flight computer;

 Full-circle visibility, with a onepiece laminated plexiglas windshield;

 Improved controllability with movable "slats" added to the front of the wing to permit stalls in complete safety.

• A new Allison J33 jet engine, the J33A-16-A, which provides 30% more thrust, thus giving the "T-33B" faster acceleration and sharper climb.

The safety slats Lockheed is putting on the wings of the new-style trainer automatically move forward and down on tracks and rollers in coordination with air speed and angle of attack.

Each slat is shaped like a comma, with the long tail curling back over the upper edge of the wing 6¾". The slat moves over a 17° arc from fully closed to open position. The slats, Lockheed says, make for "excellent stall characteristics."

For spin control the "T-33B's" horizontal stabilizer has been raised 20" above the position it occupies on the T-33, and the stabilizer span has been increased by 12".

#### Cockpits Redesigned

Both forward and aft cockpits are completely redesigned to afford more space and improve instrument panel alignment. Automatic seat ejection system similar to that in the F-94B interceptor has been built into the trainer. The canopy can be jettisoned from either front or aft cockpit, but separate controls enable each occupant to control his own ejection seat.

The aft cockpit has an "inside windscreen." Made of two sheets of laminated aluminum, anchored with steel coils on the sides, the screen automatically pops up as protection from wind blast when the canopy is jettisoned.

North American's TF-86F, which also made its first flight last December, is capable of supersonic flight during a dive. Principle additions to the F-86F include a tandem cockpit, dual controls, and a duplicate instrument panel. Modifications to the fighter-bomber include extending the fuselage section (between the nose and and wing roots) by 63" and moving the swept wings forward eight inches. Power plant in the NAA trainer is the same one used in the fighter, the General Electric J47-GE-27.

Cessna Aircraft Co. has just about completed the first of three side-by-side XT-37's which will be powered by two Turbomeca-licensed Marbore jet engines, each delivering about 900 pounds of thrust. The engines for the T-37, for which Cessna anticipates a large USAF order, will be J69's built by Continental Motors Corp. The T-37 is the only side-by-side trainer to be produced in the U.S. so far. It was the winning entry in the Air Force's 1952 jet trainer competition.

North American has finished converting 206 T-6's into T-6G's at Fresno. NAA has also ended production of the advanced piston trainer, the T-28A, for the AF, but the T-28B for the Navy is still in production.

Thus, the sole primary piston trainer in production for the Air Force is the T-34A, produced by Beech Aircraft Co. in Wichita and by Canadian Car & Foundry Co. of Fort William, Ontario. Another Beech trainer, the T-36A, was cancelled out of USAF plans in mid-1953.

The Navy's piston trainer competition, which involved 14 entries but entailed only flight evaluation of the Temco Plebe, Beech Mentor, and modified Ryan Navion with side-by-side features, is not yet decided, but the Ryan entry has been eliminated and the only planes still in the running are the Plebe and the Mentor.

#### S.14 for NATO?

NATO's need for a jet trainer is the basis for what is still a wide-open competition, but Holland's Fokker Aircraft Co. is convinced it has the answer in its S.14 side-by-side, Nene-powered craft.

The Dutch have already ordered 20 of the S.14's to get a production line started and Fairchild's Aircraft Division (which holds licensing rights on the Fokker jet) is still trying to convince the USAF that the S.14 would be equally suitable here. Fairchild submitted a Rolls-Royce Derwent-powered S.14 in the jet competition subsequently won by Cessna but thinks now that the more powerful Nene installed in the prototype would put it in the same class with the "T-33B" and the TF-86F.

The heart of the problem seems to be military indecision in the U.S. as to whether the tandem or the side-by-side arrangement is preferable. Until there is some agreement between the Navy and AF, trainer builders will have to rely on their own beliefs.

# **USAF** Units to Holland

U. S. Air Force units will be stationed at NATO airfields in the Netherlands beginning next fall, according to Cornelis Staf, Dutch defense minister. Mostly defense equipment, the units will not include planes of the Strategic Air Command.



Deliveries have been resumed on the Beechcraft Model B50 Twin-Bonanza six-place, twin-engine monoplane. Priced at \$69,950, the Model B50 has a top speed of 205 mph with a range of 1088. Beech expects to produce more than 100 of them before the end of 1954.

# **News Briefs**

#### **AIRLINES**

Michigan may eliminate refund of 11/2¢ tax presently granted to scheduled airlines. Taxation committee of legislature is studying the bill. . . . The heliport that National Airlines has been using in Miami Beach has been closed by the city council after complaints about noise. Complaints are being challenged in local newspapers. . . . Whether or not PO will continue to use helicopters for mail service will be determined by studies of costs in Chicago and New York, Assistant Postmaster General John C. Allen has told a congressional subcommittee. . . . Airlines and travel agents may be directed to set up some sort of arbitration system by which they can work out future relationships. Idea has been suggested by counsel for CAB's Bureau of Air Operations. . . . Taxes on transportation will be the target of a newly formed group named the National Conference for Repeal of Taxes on Transportation. Shippers, travel groups, and transportation industries will participate, according to chairman D. G. Ward of Mathieson Chemical Corp. . . . Net profit to Northwest Airlines from last year's operations amounted to \$1.3 million, up from 1952's \$693,000. . . . TWA radio operators have received a pay raise. Flight operators went up \$20 a month, ground operators \$20-\$30. . . . Piedmont Airlines reports 20.3% increase in passengers during '53.

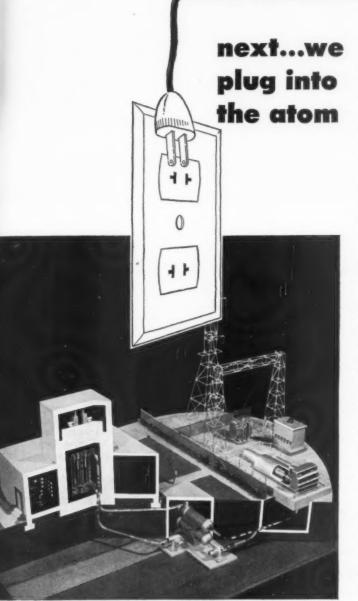
#### MANUFACTURING

The asphalt industry has charged the USAF with discriminating against that material in airstrip paving. House Subcommittee on Defense Activities has been conducting hearings on the relative merits of asphalt and concrete. . . .

Danger of explosion in partially filled fuel cells should be reduced by an explosion-suppressing device developed by Northrop. Can filled with dry ice reduces amount of oxygen below level needed to support combustion. . . New firm for domestic sale and export of accessories has been organized by the president and other stockholders in Airmotive, Inc. Name is Airmotive Accessories, Inc., 3396 Winona Ave., Burbank, Calif. . . . Bendix Radio has announced a DME backlog of \$250,000. Two units already delivered. . . . A flexible position on the weapons system concept is the goal of Navy's BuAer, according to its assistant chief (R & D), Rear Admiral Robert S. Hatcher. In some cases it would be desirable to use GFE instead, or some combination of the two systems. . . . Aeroquip Corp. reports earnings of \$126,355 for the last quarter of 1953; similar period in previous year had set earning total at \$260, 885. . . . Rapid tax write-off certificates for military aircraft tooling and facilities, the issuance of which had been suspended by the ODM in December, have been reinstated, with no dollar value placed as limit on the aircraftcapacity expansion program.

#### PEOPLE

Amos Heacock, former non-sked official, is "having trouble" with managers of Baltimore's Friendship Airport, according to the Baltimore Sun, which reports that Heacock is four months, or \$6000, behind in the rent for his aircraft maintenance shop or the Dr. C. C. Furnas, director of Cornell's Aeronautical Laboratory, has been named as chairman of the Defense Dept.'s Technical Advisory Panel on Aeronautics.

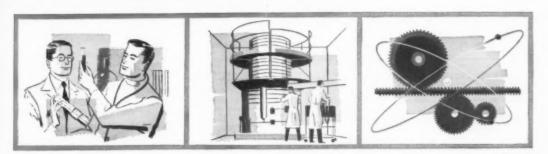


More than just a gleam in an engineer's mind...the atomic power station that may someday light your home is already being planned. Long and hard work lies ahead before the first plant goes into operation...but the incentives for pushing ahead in this field for the national welfare are many.

In its research work for the Atomic Energy Commission, North American Aviation early began exploring the possibilities of atomic power plants. Already, North American's large skilled team of scientists and engineers have designed and conducted engineering experimentation for such plants.

Other North American accomplishments include the design and construction of reactors for many research applications. Research reactors designed and built by North American Aviation for the Atomic Energy Commission are in operation at the North American atomic energy research laboratory and at the California Research and Development Company...helping provide data for many important nuclear projects.

Diversified research has already given us vital answers—in medicine's fight on cancer, in a variety of industrial projects ... in advancing our knowledge of the atomic sciences. Each phase of North American's nuclear program will help to establish the sound engineering base ... upon which will be built the atomic developments of tomorrow.



organization, facilities and experience keep

North American Aviation years ahead

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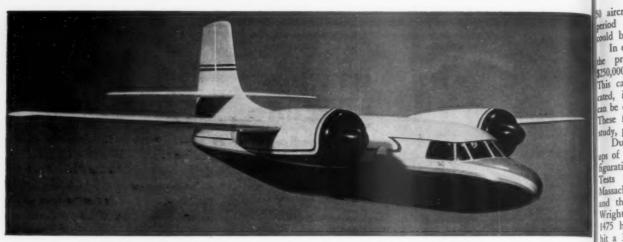
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MOCK-UP of proposed corporate transport surpassed expectations in some wind-tunnel tests.

# Aircraft Design for the Corporate User

Wind tunnel tests of NBAA design for twin-engine and four-engine model termed successful.

By Lois C. PHILMUS

WIND TUNNEL TESTS on National Business Aircraft Association's ideal corporate aircraft design have been undertaken in the past few months. Results to date indicate the design meets and, in some instances, surpasses the specification set forth.

In its survey more than a year ago, NBAA determined the need for three specific aircraft designs (American AVIATION, Nov. 10, 1952). The desire for a small twin-engine transport has been met by the Piper Twin Apache,

Cessna Model 310, and the Beech Twin-Bonanza. The Beech D-18S and Aero Commander meet specifications for the second most wanted aircraft.

In the last year, therefore, NBAA has concentrated on negotiating for the design and production of the third and largest plane in the business aircraft category.

In discussions with aircraft manufacturers, Cole Morrow, NBAA Board chairman, has discovered wide interest in the design. He states: "The progress which has been made in the design of a suitable business aircraft has been very satisfactory. The progress in the production of this aircraft has not been satisfactory."

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The problem facing interested manufacturers is where the estimated \$5 million is to come from which would bring the design through the prototype stage up to production.

Manufacturers capable of financing the project are too loaded with military contracts to undertake a new civilian design at this time. Companies that are in a position to go ahead do not have the financing to do so. There has been quite some discussion about the possibility of aircraft users assisting in the financing either through firm de posits with letters of intent or in bond

Further study suggests that this is not a practical plan. There is a matter of some 30 months from testing to pro duction. Obviously, boards of directors would have a difficult time understanding why \$25,000 of stockholders' money should be placed in the hands of the manufacturer. It would be a gamble at best and the potential user would be the loser in the event the final results were negative.

Morrow feels the ultimate answer may well rest with the military. It is felt that there is a definite need for eight-to-10-passenger, 300 mph transport aircraft in the military services, as well as in the business group. Discussions with the military will determine the exact extent of the interest. It could well solve the problem of where the development funds are to come from.

Manufacturers are not worried about the potential market. One company conducted a market survey, Morrow states, and found that it could sell

# Specifications for NBAA Design

	TWO-I	FOUR-ENGINE	
	High Wing Wright	Low Wing R-1820	Low Wing Lycoming GSO-785
Gross weight, lbs	17,000	20,175	19,855
Cruise speed, @ 20,000 ft. Rate of climb, @ sea level Rate of climb, @ 10,000 ft. Stalling speed, mph	308 2,980 2,420 77	300 2,550 2,000 80	270 1,680 1,400 79
Wing area, sq. ft	400 42.5	450 44.8	450 44.1
Power loading, take-off, lbs./hp Power loading, M.E.T.O. Power loading, single-engine Power loading, two-engine	5.8 6.7 13.3	6.2 7.9 15.7	9.5 12.4 16.5 24.8
Take-off over 50 ft. obstacle, feet	1,277	2,150	2,460
One-engine-out ceiling, feet Two-engine-out ceiling, feet	22,000	24,000	22,400 15,000
Spare power unit investment	\$33,000	\$33,000	\$18,000
Engine overhaul time, hours	1,200	1,200	600
Airplane Operating Cost:  A. Per plane-mile @ 500 miles .  B. Per seat-mile @ 500 miles .  C. Fuel for 1,000 miles .  D. Maintenance for 1,000 miles .	54¢ 6.7¢ \$71.00 \$21.80	55¢ 6.8¢ \$73.75 \$22.20	60¢ 7.5¢ \$61.40 \$33.70

50 aircraft per year over a five-year period domestically and 150 aircraft could be exported over this time.

In order to market such an aircraft, the price must be kept beneath \$250,000 for the business aircraft user. This can be done, studies have indicated, if a minimum of 200 aircraft can be delivered over a five-year period. These figures, plus the manufacturer's study, provide an optimistic picture.

During wind tunnel tests, mockups of the high-wing, twin-engine configuration came up to specifications. Tests were conducted at both the Massachusetts Institute of Technology and the University of Detroit. Using Wright R1820 engines, which provide 1475 hp dry, the design was able to hit a 300 mph cruise at 20,000 feet.

A four-engine, low-wing configuration was given preliminary tests, although the greatest market and further concentration lies with the high-wing, win-engine version.

It is understood that the under-\$250,000 price tag will include the pressurization favored by 80% of the NBAA membership. It is designed to provide a 5000-foot cabin at the de-

sired 20,000-foot ceiling.

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To further accelerate progress expected in 1954, NBAA is appointing a seven-man committee to deal with further technical details and, most important, financial aspects. All avenues of financing will be investigated. Military channels will be explored and various plans will be submitted to interested manufacturers. NBAA is confident that an answer is not far off.



GRAPHS SHOW CURVES for maximum cruise and range for twin-engine model (top) and actual cost per mile comparison for twin- and four-engine configuration. An estimated 55¢ per airplane-mile is figured for the twin.

DOUBLE-SLOTTED FLAPS and shroud extensions on new wing design of Skylark provide high lift coefficient, slow landing speeds, and fuselage-level climb characteristics.

# Robertson Skylark: High Lift for Sale

A RADICAL new lightplane design is under development by the Robertson Development Corp. of St. Charles, Mo. Its chief characteristic is an entirely new wing design which creates a very high lift coefficient, resulting in speeds as low as 25 mph and as high as 150 mph. The wing also results in very short take-off and landing runs, which will allow for short field operations. During flight tests take-off run was measured at less than 120 feet.

Known as the "Skylark," it has to date undergone about 30 hours of flight test. Its designer, James L. Robertson, 27-year-old aeronautical engineer, and the son of the late Major William B. Robertson, has guided the plane's development and served as test pilot during the initial trials.

New design elements featured in the plane are:

Spinner duct cooling which provides engine cooling at low air speeds;

 Shroud extentions on the leading edge of the wing which serve as aerodynamic flap balances and prevent stalls;

 The Robertson flap, a doubleslotted configuration of the Fowler flap;

 Spoilerons, which are tandem flush plates on top of the wing which act simultaneously and serve as spoiler ailerons.

 Elevances provide aerodynamic balances for all-moving flight elevator;

 Gust locks provide good ground control while taxiing in high winds and make possible rapid descent without increasing forward air speed while in short landings.

The short take-off is achieved, according to Robertson, because of the effect between the flaps and ground.

Robertson hopes to be in production by June 1. Rather than try to undertake the actual production, the company plans on subcontracting the work. Arrangements have been made for the aircraft division of Hussman Refrigerator Corp. of St. Louis to carry out the manufacturing.

The production aircraft will have a more powerful engine and it is expected that the plane will achieve a greater than 200 mph cruise speed, still maintaining its stall speed characteristics. The airframe being used for flight tests will be the same as that of the production model.

Featured are a single vertical fin and a big rudder with flying elevator. There is no horizontal stabilizer as the elevator is attached directly to the fuselage. Retractable gear will be

placed in the production model.

## Robertson SRX-1

DIMENSIONS		
Wing span		40 ft
Length		30.5 ft
Height		7 ft. 10 in
Tread		8 ft. 10 in
Wing area		2480 ft. sq
Flap area		95.50 ft. sq
Shroud area		74.50 ft. so
Spoileron area		17.50 ft. sq
Cabin length		10 ft. 6 in
PERFORMANCE	achieved to	date durin

E achieved to date during initial flight test period, at normal full gross weight.

Maximum speed (sea level)	over	165	mph*
Cruising speed			
(sea level)	over	150	mph*

Minimum level flight spee	ed
at sea level	under 25 mph
Take-off distance	under 120 ft.
Landing distance	under 120 ft.
Take-off distance over 50	,
obstacle	under 400 ft.
WEIGHTS	
Empty	2,250 lbs.
Useful load (normal)	1,250 lbs.
Gross weight	3,500 lbs.
Useful load (utility)	4,000 lbs.
Gross weight (utility)	6,250 lbs.
EQUIPMENT	

Engine CONTINENTAL GE260-2X
Propeller HARTZELL HC 12x20-8c
Radio NARCO VTR-1 Omnigator and
LFR-1 low frequency receiver.

# for friendly, reliable service on two continents

Tove Field o Dellas, SEATTLE-TACOMA OSALT LAKE CITY

Fifteen states in the U.S.A., eight countries in Latin America . . . seventy-five of the hemisphere's most important cities are served by Braniff. From Bismarck to Buenos Aires, a fleet of luxury DC-6s and Super Convairs offer the ultimate in air travel. Braniff connects with all transcontinental airlines . . . and connections with international carriers are excellently timed.

firs



BOOSTER ROCKETS detach themselves automatically from a British guided missile after having brought the weapon to supersonic speed.

# Behind Britain's Silence on Missiles

Guidance and control system principles revealed for first time; passive and active homing described.

By ANTHONY VANDYK

**B**RITAIN today is striving to wrest leadership from the United States in a field pioneered by Germanyguided missiles. There is hardly a major company in the British aircraft industry which is not directly or indirectly involved with guided missile work on a "super priority" basis at the present time.

Companies which have already been named as working in this field include Bristol, de Havilland, English Electric, Fairey, the Hawker Siddeley Group and Vickers Armstrongs. Hundreds of other firms are working on equipment for the missiles.

The vital "brain" of the missile, its electronic guidance system, is the responsibility of the electric, radio, radar, and instrument companies associated with the British aircraft industry. Britain's shortage of skilled electronic engineers has been a major factor in slowing down work on guidance systems and thus hampering the expansion of the entire missile pro-

The importance of the guidance system is such that it has always been one of the least discussed subjects on both sides of the Atlantic. Recently, however, the Society of British Aircraft Constructors disclosed some information on the general principles of missile guidance and control systems.

A missile can be guided to its target either by "passive" homing, where it homes on to a source of energy radiated by the target, or by "active" homing, where the missile itself transmits energy which is reflected back from the target.

This source of energy radiated or reflected by the target can be any of the various forms of energy produced by an aircraft in flight, such as heat, noise, wake, infra-red radiation and static electricity. Some of these can be detected many miles away, others only at quite short range.

By fitting the missile with a detector or receiver which will pick up responses from the target, amplify them, and pass the information on their direction and strength to the controls, the missile will then be automatically guided to the source of energy -and it will ultimately hit the target. This is "passive" homing, which is usually a relatively short-range system.

To pick up targets at longer range,



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"active" homing is used: the missile itself transmits energy and picks up the reflection or echo from the target which is in turn used to steer the missile on to it. The missile has therefore to carry a transmitter as well as a detector or receiver (as does a radar set).

The disadvantage is the weight of equipment necessary and the size that results if an antenna and a heavy power supply have to be carried. Thus, although the system is theoretically a long-range one, in practice its bulk keeps down the distance over which it can be used.

These limits on the size of the transmitter can be overcome if, instead of being placed in the missile itself, the transmitter is located elsewhere, such as in a larger aircraft (or on a ship or on land). In this way the complete guidance system is a remote highpower transmitter with a smaller receiver in the aircraft capable of directing a missile to the source of reflected-energy.

energy.

This is known as the "semi-active" homing system and is at present accurate at ranges up to about 17 miles.

Another guidance system which gives about the same results as "semi-active" homing is "beam riding" which involves a radar beaming device in another aircraft (or on a ship or on the ground) locating the target and locking on to it.

The missile is fitted with a rearward-looking receiver which, together with the control system, ensures that the missile flies right along the center

of the beam.

The disadvantage of these two long-range systems ("semi-active" homing and "beam riding") is that because the transmitting source of energy is based away from the missile, the farther the missile flies from the transmitter, the less accurate is the information it

This difficulty is overcome by carrying yet another transmitter in the missile itself which is not switched on until the final phase because for the greater part of its journey the missile's course is controlled by information picked up by its receiver from the surface control. The receiver in the missile is common to both the ground and airborne transmitters.

## **Basic Operation**

Basically, then a missile operates

- It is launched and reaches supersonic speed, its booster rockets fall away, and it settles down to controlled flight.
- At this point, the mid-course, "semi-active" or "beam riding" homing devices take over. These transmitters locate the target and pass the information to a receiver in the missile, keeping the missile on course over the greater part of its journey.
- Finally, shortly before reaching the target, when the outside transmitter may be insufficiently accurate, a small transmitter in the missile itself takes over.

The complicated series of electronic and radio aids which form the "brains" of guided missiles would be of little value if they were not linked to the controls of the missile so that their instructions effectively maneuver the weapon on to its target.

The control and lifting surfaces of

a missile are usually sharp edged and razor thin, and quite small surfaces can produce large forces which enable the weapons to maneuver at 7 to 20 "g"—well beyond the capabilities of piloted aircraft. In the simplest missiles the wings are "all moving" so that the combine the functions of the lift-producing surfaces with the controls.

There are two main methods of control—the Cartesian method and the polar system. Missiles controlled by the Cartesian method have two sets of "wings" fitted at right angles to each other—four wings forming a cross round the fuselage. Moveable control surfaces are fitted to the wings. The missile is kept in level flight by gyros.

If the guidance system requires the missile to turn to the left or the right, the vertical control surfaces are operated, as rudders are operated on a conventional aircraft. If the guidance system requires the missile to go up or down, the horizontal surfaces move.

Missiles using the polar system of control have a configuration more like that of a conventional aircraft. They have only two wings, with one pair of controls arranged to work in opposite directions like ailerons and another set working together like elevators on the conventional aircraft.

The receiver in the missile controls its movement by measuring the angle between the target-response and the line of flight of the weapon, and the range of the target. The missile is then rolled until its wings are at right angles to the plane of the missile and the target. The elevators then pull the nose up or down until it is pointing directly at its objective.

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W. C. Whitehead

Executive VP and Mgr. of
Airsupply Company



W. R. Ramsaur VP—Engineering Mfg. Divisions



C. N. Monson VP and Manager AiResearch Mfg. Co.

# Versatility Is Keynote at AiResearch

Best known division of Garrett Corp. has grown into the third largest firm in aircraft accessories.

By FRED S. HUNTER

A UNIQUE labor relations feature at The Garrett Corp., which hasn't had a work stoppage in its 18 years, is an annual corporation-wide employe opinion survey. All of the company's workers are invited to voice their opinions freely on company policies, products, processes or programs.

Biggest portion of Garrett's 7000 employes are in the corporation's AiResearch Manufacturing Co. divisions at Los Angeles and Phoenix, which are engaged in engineering, research, development, and manufacture of specialized products for the aircraft industry. These are predominantly engineers and skilled factory workers.

Other Garrett divisions are the Airsupply Co., western engineering and sales representative for eastern accessory manufacturers; the Garrett Supply Co., industrial distributors of general tools and industrial supplies; and the AiResearch Aviation Service Co., airplane modification, overhaul and maintenance center at the Los Angeles International Airport.

A wholly owned subsidiary is the Northill Co., manufacturing lightweight anchors for small boats and aircraft.

By convincing the workers of the honesty of purpose behind the opinion survey, Garrett has succeeded almost entirely in avoiding flip replies, complaints from chronic soreheads, or returns motivated by personal spite.

No employe reveals his identity in answering the annual questionnaire. Original answers are seen only by the research agency which conducts the survey, Psychological Services, Inc., which is directed by Dr. Floyd Ruch, and the answers are destroyed after the information has been taken off.

Management ideas differ on whether it's wise to let an employe put in his two cents' worth about his job. But it works fine at AiResearch and the other Garrett divisions. C. W. Reynolds, Garrett's vice president of public and industrial relations, says the opinion survey pays off both for the company and for its employes.

#### Morale and Requirements

The corporation looks to the survey as both an index of morale and as a means of determining the basic requirements of its employes. The relative position of these two indices has a direct bearing on the successful operation of the company. The survey enables management to spot problems before they become elements of dissatisfaction.

Outweighing all other elements is the employe's desire to make a contribution in the form of a constructive suggestion, Reynolds declares.

"This is the real area of importance in the survey, because it reflects employe participation," said Reynolds. "Here is where the employe feels that he is given a voice in moulding the policies of the company."

Sample survey result: In 1950, 86% of the Garrett employes thought the company's retirement and severance plan was above average. By 1951, this percentage had slipped to 75% and in 1952 it was down to 66%.

"Since the plan itself had not changed and still offered the employe exceptional benefits, it was clear we had a job of education to do, particularly with our new working force," said Reynolds. (Garrett's employment had gone from 3500 in 1950 to 7000 in 1953).

An improved orientation program for new employes stopped the downward trend.

The opinion survey reflects J. C. (Cliff) Garrett, who is a stickler on management-employe relations. At 46, the president of The Garrett Corp. and its founder, he is a dynamic combination of salesman-engineer who may be said to have built his business out of thin air. Most of his products deal with some form of air control, and things were pretty thin back in 1936.

In less than 15 years Garrett pushed his AiResearch Manufacturing Co. to the position of third largest in the highly competitive aircraft accessory field. In calendar 1953 The Garrett Corp. crossed the \$100,000,000 thresh-hold in sales.

#### Started with Tools

Garrett struck out on his own in 1936 by establishing first the Garrett Supply Co. to secure specialized tools for the west coast aircraft manufacturers from eastern supply houses, whose thinking ran to heavy industry rather than to the lightweights of the aircraft industry.

So successful was this idea that within two years Garrett split into two major divisions. The new division was called Airsupply Co. It handled sales and engineering on production type items that had grown into the Garrett line, while Garrett Supply stuck to its tools.

By 1939 Garrett already was thinking in terms of high altitude flight. This led to the formation of the third, and now the best known, division of The Garrett Corp., the AiResearch Manufacturing Co., to explore the possibilities of cabin pressurization. It produced the first mechanically assembled aluminum intercooler which toned down the hot blast from the supercharger of the Boeing B-17 in order to make the compressed air acceptable to the engine.

Garrett's original intent was to engineer and design the unit, not to make it, but his inability to secure a manufacturer who could do the close tolerance work forced him into production.

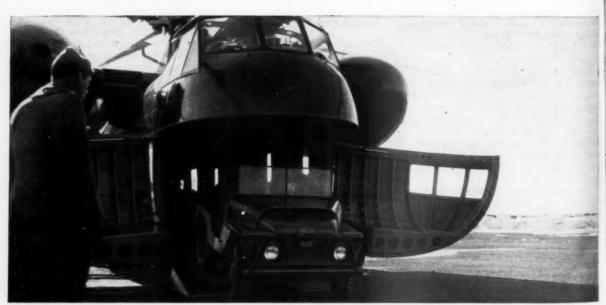
Since then AiResearch's aircraft accessories have attained more than a billion hours of actual operation. Behind this record lies more than five and a



BIGGER PUNCH—Two squads of hard-hitting Marines— 26 men with full battle equipment—charge out of this new Sikorsky helicopter's wide-open nose door in a

demonstration of airborne assault techniques. The huge XHR2S was designed especially to meet the Marine Corps' need for a big, fast, highly maneuverable helicopter.

# WORLD'S MOST POWERFUL HELICOPTER FLIES FOR THE MARINE CORPS



PRACTICAL DESIGN—Location of two R-2800 engines in high, outboard pods leaves the fuselage open and clear for passengers, vehicles or other cargo. Wide clam-

shell doors and built-in ramp permit rapid loading and unloading. The helicopter compares in size to a twin-engined airliner. A commercial model, the S-56, will be built later.

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BUILT FOR BATTLE—Sikorsky Aircraft's rugged XHR2S, the most powerful helicopter now flying, was designed to carry out modern vertical assault tactics. It has flown with over 6,500 pounds of payload, and at speeds well over 150 m.p.h. with landing gear retracted into engine pods. Five-bladed main rotor and the tail both fold mechanically for easy stowage and handling aboard ship.

SIKORSKY AIRCRAFT

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huge Iarine opter. half million hours of development in producing new or improved products to help airplanes to fly faster and higher. AiResearch delivered more than 400,000 units last year.

Boeing started exploring the possibilities of cabin pressurization as a companion to supercharging aircraft engines for the B-17, but the control sys-

tem was the hooker. Boeing engineers

said pressurization was 20 years off.
Garrett disagreed, took on the Boeing patents, and designed a fully automatic cabin pressure regulating system. To do it, AiResearch installed the country's largest privately owned stratolab, which accommodated a complete airplane fuselage. When the B-29 came along, requiring pressure, AiResearch had the control system.

The Garrett record in the aircraft accessory field looks like a flashback on a chain reaction. Research, development and finally production of one component led to another.

**Example:** The early oil cooler was a sound product. But its operation on initial installation was mediocre.

The Trouble: Faulty controls. Ai-Research developed the valves to make it work. AiResearch remained in the valve business.

Another result of the research and development progression: it has made AiResearch a specialist on systems. These are in nine major categories: air turbine refrigeration, heat transfer, electric actuators, gas turbines, cabin superchargers, pneumatic power, electronic controls, cabin pressure controls and temperature controls. They frequently interlock in the production of a system.

AiResearch currently is producing nearly 1000 individual products within this range.

With an engineering staff of 669 in Los Angeles, 150 more in Phoenix, and a laboratory staff of 330, research and development are the cornerstones on which AiResearch bases its future and each year sees new products.

New products put on the market last year include a cabin pressure controller, air turbine motor using a variable area nozzle, ram air turbine, lightweight generator, plate fin oil cooler, angle of attack and yaw computers, pneumatic pressure controls, and new models of refrigeration turbines, cabin pressure regulators, and gas turbine compressors.

The new Douglas DC-7 carries 76 AiResearch units. Lockheed's Super Constellation, the Martin 4-0-4's and the Convair 340's all carry complete AiResearch pressurization and air conditioning systems.

Military planes on the AiResearch product list are late type jets built by

## On the Cover

J. C. (CLIFF) GARRETT brings to his decisions as president and general manager of the Garrett Corp. the aviation knowledge of a pilot who habitually commutes between his homes in Los Angeles and Phoenix in his DC-3. Garrett, 46, was born in Seattle, Wash., and attended the University of California. He entered aviation in 1928 at Lockheed, and joined John K. Northrop the following year, taking charge of procurement and production. He organized the Garrett Corp. in 1936.

Republic, Lockheed, Chance Vought, McDonnell, Grumman, North American, Convair, Douglas, Northrop, Boeing, Martin, Canadair, and A. V. Roc.

AiResearch is working on systems for the cabin pressurization and air conditioning of the Boeing 707 jet transport and the Douglas DC-8.

Like other companies engaged in the aircraft business, AiResearch's ratio of profit to sales is low. In the last fiscal year, which ended June 30, 1953, it was 3.2%. Approximately 90% of AiResearch's business is military. This is about 40% directly with the military services and 60% with the prime contractors.

By virtue of its development and production progress, coupled with the diversification of his products, Garrett had a broad cushion on which to land when the bottom fell out of the aircraft industry in 1946.

#### No Pots and Pans

He trimmed the working force down to 600 from a wartime high of 4500, dismissed any idea of producing pots and pans, directed W. C. Ramsaur, his vice president in charge of engineering, to keep his engineers at work strictly on aviation products. The sales staff was ordered to push the company's commercial aircraft products and to develop new ideas for the military.

Garrett had everything new commercial transports needed in the way of accessories, particularly for air conditioning and pressurization. Boeing's Stratocruiser, Consolidated's Convairliners, the Lockheed's Constellation series, the Martin 4-0-4, and the Douglas DC-6 carried AiResearch equipment. Knocking on doors at Wright Field and in Washington began to produce a steady trickle of business.

By 1947 Garrett had his operations back in high gear. From that point on progress was steady; then the Korean outbreak mushroomed AiResearch right out of its buildings.

Today's jet airplane is no better than its accessories. When a jet operates high up, the pilot looks to his accessories to fire the guns, to provide pressurization and air conditioning for himself and his equipment, and to provide temperature and pressure controls for the turbojet itself.

In addition, overcoming the inertia of a turbine engine requires a starter with up to 100 times the power output needed to kick over a piston engine. Some auxiliary ground power sources used for starting need a truck to haul them around the airport, limiting the plane's operational range.

AiResearch went after an auxiliary power unit that was light enough to be transportable by air and settled on the gas turbine. It became the heart of a pneumatic power system which winds up the starters (also made by AiResearch), provides electrical power through an air turbine motor or gas turbine motor (also AiResearch) hooked up to the generator, ground heating, air conditioning, and taxiing power.

The Navy, sharing in the development, liked the small gas turbine power units so well that it gave AiResearch production orders topping \$36,000,000. The Air Force followed suit, ordering a gas-turbine compressor-drive ground heater to unfreeze B-36's in the Arctic and a 140 hp air turbine starter having a weight of only 35 pounds.

AiResearch suffered a blow when the Navy cancelled out \$25,000,000 of its production order because of a realignment in its jet engine procurement. This was a hard jolt, But the company has bounced back to the tune of \$15, 000,000 in reinstated orders. with

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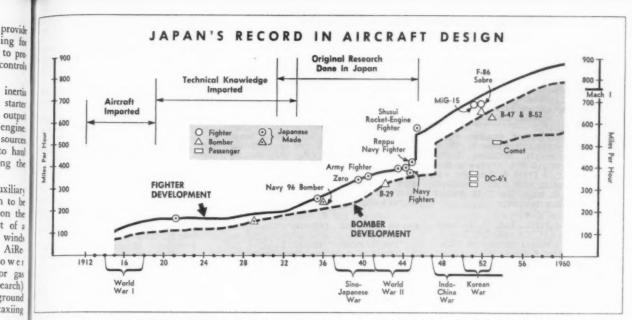
Looking forward, AiResearch al ready is developing bigger, higher powered turbines to be prepared for the bigger, heavier turbojet and turboprop engines the engine makers have on the way. Air turbine starter and gas turbine compressor production is in the new \$5,000,000 plant built for the AiRe search Manufacturing Co. of Arizona at Phoenix.

The Garrett Corp. now occupies 795,000 square feet of floor space of which 703,000 square feet is taken up by the two manufacturing divisions in Los Angeles and Phoenix. Cost of the company's total investment in property, plants, and equipment is \$8,600,000.

At the end of fiscal 1953, The Garrett Corp. had a net worth of \$13,568,398, represented by 629,244 shares issued and outstanding of an authorized 1,000,000 shares of capital stock having \$2 par value; capital surplus was \$1,048,720 and earned surplus \$11,261,190. Current assets stood at \$46,886,820.

The Garrett Corp. has always been a moneymaker and has paid consistent dividends since 1937.

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NINE YEARS AFTER the end of the war, Japan prepares to resume aircraft manufacturing

# Japan's Industry: Back in the Race

Forthcoming action by nation's Diet, negotiations with Lockheed and North American, foreshadow come-back.

By WILLIAM D. PERREAULT

THE aircraft industry of Japan, a mere skeleton of the wartime industry which produced thousands of fighters, bombers, and related equipment, is poised to re-establish itself as prime aircraft producer.

The Japanese industry's hopes are

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• A Federal Operations Agency (MSA) grant which would provide the funds with which Japan would undertake a larger share in its own defense

Action by the Japanese Diet which would re-establish Japan's military organization, which is now sharply limited as a home defense agency within bounds which will not permit aggressive activities.

· Establishment, as a result of the above Diet decision, of a specific requirement for 1000 military aircraft during the coming year.

None of these aims is a reality today. All three show promise of fulfillment in the next few months.

The Diet is in session considering Japan's defense requirements and budget. Top leaders have accepted the 1000 aircraft requirement, a watered-down version of an earlier attempt to get about 3700 planes. Finally, and perhaps

most important, the budget which Eisenhower submitted to Congress is said to contain a grant for Japan among its lump sum totals.

Meanwhile the U. S. Air Force, reportedly carrying out the wishes of the U. S. State Department, is the greatest single force in Japanese aviation. The Far Eastern Air Force, both from economic and strategic considerations, has set the stronger members of the old Japanese aircraft industry to work overhauling first-line military equipment, including the North American F-86 and the Lockheed T-33. The USAF has allocated \$81/2 million in airframe, engine, and accessory overhaul work to Japanese companies during fiscal 1953-54.

#### Negotiations Under Way

Possibly more significant than the active contracts overhauling FEAF fighters, bombers, and trainers are the negotiations now in advanced stages between Lockheed Aircraft Corp. and Kawasaki Machine Works for licensing construction of the Lockheed T-33 and F-94C and similar negotiations between Mitsubishi Heavy Industries, Reorganized, and North American Aviation covering the F-86 Sabrejet and the T-28 basic trainer.

Another basic factor which will influence activities is the request now before the Diet for \$3 million to form a new government-financed engine company which would replace the Nihon Jet Engine Co., the current engine research outfit formed by Ishikawajima, Nitsubishi, Fuji Industrial and Fuji Precision Works.

This company is now building an engine of 2000 pounds thrust which should be running this spring and hopes to have a 6000-pound-thrust engine operating in 1955. If the Diet approves the proposed new company, research would be accelerated.

Meanwhile The Society of Japanese Aircraft Constructors (Japanese AIA), headed by Nitsubishi's Paul T. Shoda, is seeking Government approval to reopen the wind tunnel owned by Sumitomo Metal Industries as an industryoperated facility.

These are the major factors on which the Japanese aircraft industry's future seems to hinge. Specific comments about 24 of the 25 members of the JAIA follow. Not listed is Kayaba Aircraft Co. which is working on a convertiplane design and Shin-Tachikawa Aircraft Co., which produced the R-52 trainer. Neither are members of the industry association.

On the following pages, a list of Japanese manufacturers.



# **Leading Japanese Manufacturers**

Members of Japan's Aircraft Industries Association

Mitsubishi Heavy-Industries, Reorgan-ized, Ltd., Main Office: 1, 7-chome, ized, Ltd., Main Office: Wadamiyadori, Hyogo-Ku, Kobe. Tokyo Office: 14, 2-chome, Marun-

ouchi, Chiyoda-ku, Tokyo.
President: Fukazo Fujii. Vice President: Paul T. Shoda. Chief Engineer:

Jiro Horikoshi.

General: Company employs about 400 workers in maintenance of U. S. Air Force aircraft, including North American F-86's, B-26's, Curtiss C-46's, and overhaul of Pratt & Whitney engines. Negotiating with North American for licenses to build the T-28 trainer and F-86 fighter-bomber.

Fujii Industrial Co., Ltd., 3, 3-chome, Kasumigaseki, Chiyoda-ku, Tokyo. President: Kazuo Shirakawa. Direc-Takeo Kotani,

General: Company tried to get Beech T-34 license, now has no specific aviation work but is scheduled to merge with Fuji Heavy Industries Co., this

Fuji Heavy Industries Co., Ltd.

President: Kenkichi Kita. Vice president: Kazuo Shirakawa. Director: Takeo Kotani. Engineer: Katsuji Nakamura

General: Will absorb Fuji Industrial Co. this year. Has been licensed by Beech Aircraft to build T-34 Mentor trainer for Japan's National Security Force. Negotiating for right to build Continental engines used in T-34. Expects to assemble first T-34 from U. S.built parts by mid-1954. Officers of this company will head the merged com-

Kawasaki Machine Works, Ltd., 1, 2-chome, Wadayamadori, Hyogo-ku, Kobe. Tokyo office Sanko Bldg., 5 2-chome, Ginza-nishi, Tokvo.

President: Hitoshi Isano. Directors:

Kiyoshi Yatsumoto, Takuzo Ogawa.

General: Major project today is building Bell B-47 helicopters under license, initially using U. S.-supplied parts. Also making a 250 horsepower piston engine scheduled for testing early in 1954. Negotiating with Lockheed Aircraft Corp. for licenses to build F-94C and T-33. Doing maintenance work on these types for U. S. Air Force in meanShinmeiwa Kogyo Co., Ltd., Nauro-Nishinomiya-city, machi. Province. Tokyo office: No. 4, Naka 13th Blvd., 12, 2-chome, Marunochi, Chiyoda-ku, Tokyo.
President: Ryuzo Kawanishi. Direc-

Hiroshi Kono.

General: Represents former Kawanishi Aircraft, which built flying boats isin Aircrait, which built flying boats during war and still hopes to build this type aircraft. Negotiating with British and U. S. companies for flying boat licenses. Will re-enter active aircraft work with USAF military maintenance contracts according to present plans. Active today in machinery manufacture.

Showa Aircraft Industry Co., Ltd., Showa-machi, Kitatamagun, Tokyo. Tokyo Office: Mitsui Bldg., Nihonbashimuro-machi, chome, Niho Chuo-ku, Tokyo,

President: Kumezo Ishizuka. Gen-eral Director: Shinji Iwabuchi. Direc-

tor: Tsuneo Okai. General: Now overhauling light air-craft (L-19's and other liaison planes) for U. S. Air Force. Reports indicate they will build a trainer, but no official comment.

Kawasaki Gifu Seisakusho Co., Ltd., Mikakino, Scharamachi, Inabangun, Gifu

President: Kimiyo Nagano. Director: Itio Takashiba.

General: Kawasaki employs about 700 people in aircraft maintenance and production work, primarily on contract with USAF for overhaul of North American P-51's and liaison type aircraft. Built KAL two-place liaison and is building new trainer.

Fuji Motors Corp., 2, 1-chome, Shibatamuracho, Minato-ku, Tokyo.

President: Soji Yamamoto. Engineer: Usaburo Furubayashi.

General: Now repairing civil avia-tion engines; has negotiated with Continental Motors regarding manufacture of their engines under license. Still no government consent to such agreement.

e Toyo Aircraft Manufacturing Co. Ltd., Nikkatsu International Hall Bld., 1, 1-chome Yurakucho, Chiyoda-ku, Toyko. President: Shigemi Yokoo. Direc-

tor: Yoshio Hashiguchi.

General: Have designed and built two-place trainer, the TT10, and he license rights to build Fletcher FD-2 Company is in difficult financial condi Actual production of either air. craft is unlikely.

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Ishikawajima Heavy Industries, Ltd., 54, Tsukudajima, Chu-h Tokyo.

President: Toshio Doko. Engineen Tsuruo Miyazaki and Osamu Nagano. General: Active in Nihon Jet Engine Co., Japan's joint engine development group. Famous for industrial turwork and active during war in

turbine research.

Sumitomo Metal Industries, Ltd., 31, 4 chome, Kawaramachi, Higashi-ku Osaka. Tokyo Office: Shin-Marunouchi Bldg., 4, 1-chome, Maru-nouchi, Chiyoda-ku, Tokyo. President: Hisakazu Hirota, Direc-

tors: Otokichi Kimura and Kikusabu Nagashima. Engineer: Takeo Ueno.

General: Sumitomo is a major pro ducer of industrial metals in Japan and supplies aluminum sheet for the Far Eastern Air Force. Prior to the war is was a licensee of Hamilton Standard manufacturing propellers, and company officials hope to renew this arrange

Fuji Precision Machinery Co., Ltd., 11 Shikumachi, Suginami-ku Tokyo President: Dan Ino. Directors President: Dan Ino. Directors Haruo Niiyama and Ryoichi Nakagawa General: Formerly the engine plant of the Nakajima Group, now overhauk private aircraft engines. Interested in obtaining license for the Wright engine in the North American T-28 trainer.

Furukawa Electric Co., Ltd., 8, 2-chome Marunouchi, Chiyoda-ku, Tokyo. President: Keizo Nishimura, Direc-

tor: Michio Tanaka.

General: No current activity but interested in producing light metals for aircraft production. Was one of "big two" in wartime metal production team.

Shinko Metal Industries, Ltd., Chofumachi Shimonoseki-shi, Yamaguchi Province. Tokyo Office: Tekko Bldg. 1, 1-chome, Marunouchi, Chiyodaku, Tokyo. President: Yoshitsugu Takahashi

Engineer: Sadajiro Kukubo.

General: No activity today but was important company in light alloy production during war.

Japan Special Steel Co., Ltd., 6475, 1chome, Omori, Ota-ku, Tokyo. President: Einosuke Ohkawara, Director: Yoshio Ishiwara.

General: No aviation today but was major supplier of aircraft steel during war and retains interest.

Tokyo Aircraft Instrument Co., Ltd., Kuramaye Industrial Hall, 8, 2chome, Shibashinbashi, Minato-ku, Tokvo.

President: Shizuo Wada. Directors: Yoshihisa Hidaka and Hiraku Tomi-

General: Company repairs instru-ments for Far Eastern Air Force and Navy. Building "Link" trainers for Na-tional Security Forces. Negotiating with Bendix Aviation for licensee rights.



Tokyo Precision Instrument Com., Ltd., 31, 4-chome, Shibashinbashi, Minato-ku, Tokyo.

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President: Makoto Hashii, Director: Masumitsu Furuki. Engineer: Takao yamaguchi.

General: Company had Sperry jeense prior to war and is now build-ing Sperry marine instruments. Hopes to get into aircraft instrument production. Produces marine gyros. Is negotiating with Bendix Aviation Corp.

Hokushin Electric Works, Ltd. 312. Shimomaruko - machi, Ota-ku. Tokvo.

President: Sohei Shimizu. Directors: Minoru Matsuo and Maomosuke Miya-

General: Famous Japanese aircraft and marine gyro instrument company, currently doing industrial work, which is negotiating with Bendix Aviation

Japan Radio Co., Ltd., 930, Kamiren-jaku, Mitaka-city, Tokyo. President: Hiromizu Kono. Engi-neer: Shigeru Nakajima.

General: Supplies National Security Force with communications equipment.

Tokyo Shibaura Electric Co., Ltd., 72. Horikawacho, Kawasaki-city, Kanagawa Province.

President: Taiichi Ishizaka. Direc-or: Kumao Ikeda. Engineer: Kiyoshi

General: One of the big wartime producers of radio equipment and now producing trial quantities of communi-cations gear for National Security Forces. Also builds motors.

Mitsubishi Electric Co., Ltd., Tokyo Bldg., 3, 2-chome, Marunouchi, Chi-yodaku, Tokyo.

President: Shinichi Takasugi. En-gineer: Hideo Miyazaki. Engineer: Ken Okubo.

General: One of the big wartime producers of radio equipment, now producing trial quantities of communications gear for the National Security

Nippon Electric Works, Ltd., 2, Shibami-tashikokumachi, Minato-ku, Tokyo.

tashikokumachi, Minato-ku, Tokyo.
President: Toshide Watanabe. Director: Masaji Kobayashi.
General: One of the large wartime producers of communications equipment now producing trial quantities of radio gear for the National Security Force.

Yokokawa Electric Works, Ltd., 3000, Kichijoji, Musashino-city, Tokyo. President: Tokisuke Yokokawa. En-gineer: Miyaji Tomoda. General: Manufactured magnetoes

and other accessories during war. Cur-rent interest in aircraft instrument production but no specific activity. Negotiating with Bendix Aviation Corp.

ito Manufacturing Co., Ltd., 28, Shibatakanawa Minami-machi, Minato-ku, Tokyo.

President: Genrokuro Koito. Engineer: Mamoru Shibata.
General: General electrical manu-

facturers now producing fuses, relays, and similar equipment on small scale for aviation needs and on large scale industrially. Provided equipment for KAL trainer and for Fletcher FD-25.

# **Extra Section**



#### By Jean-Marie Riche

PARIS, FRANCE—Unusual fog, last November, was responsible for many cancellations on the European network. One day, after three hours of waiting, "Airline B" passengers were notified that their flight was definitely cancelled and offered transfer to "Airline A" flight. Before inviting the passengers to board the aircraft, Airline A announced: "Airline A passengers are kindly requested to board the aircraft first and proceed to the front seats. Airline B passengers are requested to remain together in the back seats." Airline B passengers then received a sandwich and a glass of plain water (Airline B catering) while Airline A customers were served a full meal: a torture of Tantalus in the air devised by sales people of Airline A.

Poorly paid European aviation writers get few opportunities to check for themselves what goes on in the air because strict IATA regulations prohibit free transportation of press people. This has practically grounded them. IATA insists CAB is responsible for worldwide observance of these regulations. Result is that commercial aviation gets very little publicity in the European press and the average European is not educated on air transport as he ought to be. Many Europeans still consider air transport as a dangerous hazard and prefer the reliable and fast services of their excellent-but costly -railways. This situation should be considered by the meeting on the organization of air transport which will be held in Strasbourg from April 21 onwards under sponsorship of ICAO and at the request of the Council of Europe.

The structure of European air transport is very different from the U.S. air transport picture. All U.S. airlines are privately owned. Some are scheduled and some are subsidized. In Europe there are government-owned airlines getting subsidies and privately owned independent airlines getting no subsidies but operating in competition with government operators both on a scheduled and non-scheduled basis. Sobelair, a DC-3 operator between Belgium and the Congo, is the only European 100% non-scheduled carrier I know which is operating with real efficiency.

Operation of private transport aircraft is a rarity here. Mr. Boussac, the world-wide-known textile manufacturer, operates a "fleet" of one Bristol 170 cargo plane, one Grumman Mallard, one DH Dove, and one Navion, all based at Toussus-le-Noble. Horses of Boussac's stable are sometimes connected with Boussac's mechanical hp when the "freighter" carries the race horses to race fields, especially from France to the UK.

Mr. Dieu (French word for God), a supervisor of Sabena, was travelling incognito on a Congolese route of the Belgian air line. While proceeding to the cockpit for an inspection he was stopped by the hostess, who pointed out that the crew compartment was off-limits for passengers. "Well," he replied, "I am God, you see . . ." Hostesses knew mad people should never be contradicted. She introduced "God" to the captain and thought everybody had gone crazy when she noticed the respect of the pilot for the divine passenger.





# **West Coast Talk**

By Fred S. Hunter



THIS MONTH, March, might be a big one for Lockheed. Its XF-104 light-weight air superiority fighter is due to fly. Lockheed's first jet, the P-80, was better than striking oil. It led to the production of more than 5000 fighters and trainers (with more of the latter still rolling off the assembly line) and a manufacturing span of 10 years (which may very well be prolonged even further). Who knows what the XF-104 will bring?

The industry's hot stove league, to borrow a phrase from the baseball writers, has the XF-104 pegged as a hot number. For one thing, it's the first new fighter design to have the full benefit of a wide scope of new high-speed, high-altitude information derived from the experimental aircraft that have been flying at Edwards AFB, like the Navy Douglas D-558's and the Air Force "X" jobs.

Lockheed also will be submitting the XF-104 to prove that its commitment to the straight wing principle is no mistake. You can bet this one will have a real thin wing. Under 4%, surely; perhaps even less than 3.5%.

Lockheed has an order for two XF-104 prototypes. If the airplane's performance impresses the Air Force and a production order follows, it could keep Lockheed in the fighter business for a long time. Maybe even until Lockheed has a missile to offer as a successor.

Don't be surprised if the F-104 turns up with a nickname of the "Mamie Stover" variety. Those familiar with the design are already calling it "The Prostitute." The wings are so small it has no visible means of support.

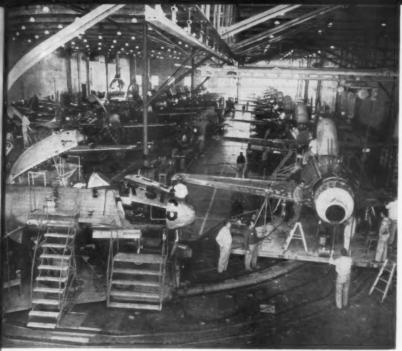
Eastern Air Lines will get the first 125,000-pound Douglas DC-7's. Pan American's DC-7's also will have the higher maximum gross weight for take-off. The boost will be derived from the advanced Wright Turbo-Compound engines, which will develop an additional 100 hp each in rated power. This total of 400 hp more per airplane improves CAR second stage performance. Similarly Lockheed will be able to hike the maximum gross of the Super Constellation to 137,500 pounds when the new engines become available in 1955.

Pakistan International Airways, soon to become the newest of the world's international air carriers to begin operations, will use Australian and British pilots to fly its Lockheed Super Constellations. U.S. pilots possessing the required airline experience come too high in the wage scale. PIA's scale for captains is 3000 rupees a month (the equivalent of approximately \$900 in U.S. currency), with a guarantee of five years of employment. That's high pay for most of the world's airlines and PIA recruited a group of seasoned captains from British Commonwealth Pacific and British Overseas. Flight engineers also are Australian and British, but co-pilots are Pakistan nationals. After the five years, they'll be given the chance to qualify as captains.

Woody De Silva, who knows practically everybody in aviation, will observe his 25th anniversary with the Los Angeles International Airport on March 20. Western Union undoubtedly will be swamped on the happy day. Better get your wires in a couple of days early.

Long Beach division of Douglas is advertising in the Long Beach papers to give the people some idea of the division's importance to the city. Douglas has an \$80,000,000 payroll in Long Beach. The advertising is part of a program devised by Kenneth G. Farrar, the division general manager, to develop a closer relationship between the company, its employes, and the community for the good of all. Farrar's the type of executive who is highly conscious of the importance of sound public relations.

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# **Production Short-Cuts**



Photos speed inspections on Northrop's F-89D interceptor. Photographs of area being inspected are retouched to draw attention to critical points. Time required for inspection has been cut up to 50%. Mass of documents formerly needed for inspection of one side panel is shown at left, above. New photo aids form smaller pile at right.

#### Mechanized final assembly for Lockheed's T-33 jet trainers is report-

edly saving more than 3000 manhours per month. Replacing a step-by-step system, the continuously moving line has 22 as-sembly stations. Cost of the 725 foot line was approximately \$60,000.



Wire coils itself automatically as it is fed into this rotating aluminum receptacle at Convair's San Diego division. Wire was formerly hand coiled after stamping. Estimated annual saving: \$3200.



Dry ice saves Convair rubber pads to the tune of \$60,000 each year. Pads, used during aircraft tests, are glued to structure. Formerly they were destroyed during removal by electric iron or hack saw. Now dry ice makes it possible for them to be pried off without damage.

# **Maintenance Bulletin Board**





APPEARANCE of R-2000 engine rocker box after 1500 hours flooded (right), unflooded (left).

# **NWA Floods Rocker Boxes with Oil**

A preliminary evaluation by Northwest Orient Airlines of a single Pratt & Whitney R-2000 (Douglas DC-4) engine operated with all cylinder rocker boxes flooded with oil points to "success beyond a doubt." The net result, airline officials feel, was better engine reliability, reduction of the potential of unscheduled upper cylinder changes, better lubrication, and less engine wear.

NWA also believes that, should the modification be applied to all R-2000 engines, it might very well lead to an extension of the engine overhaul period, now pegged at 1500 hours.

The preliminary test conducted at Northwest involved the use of one R-2000 engine which was operated for the 1500-hour period. As a result, the airline now plans to modify and test a larger number of flooded engines, either 10 or 20 as the next step in the

The decision to expand the program was founded on teardown inspection of the first engine, which showed:

• Reduced exhaust valve guide wear to "practically nothing." According to NWA, unflooded engines normally show wear of about 0.020" at each overhaui. On cylinders in the test engine, this wear was less than 0.002", a condition which engineers of the airline attribute to reduction of coke formation in the rocker boxes.

#### No Carbon Formation

• Improved nose section bearing life. Of eight such bearings in the flooded engine, seven were still in usable condition. NWA looks at this bearing condition as a primary problem on the R-2000 and feels that performance in unflooded engines is affected by carbon in the oil stream carried into the bearing races. The conclusion is that, with the flooded engines, the carbon is just not allowed to form.

The project was undertaken by Northwest after a similar program on its Boeing 377 P&W R-4360 engines proved to be an unqualified success. Although other airlines have experimented with flooding of individual rocker boxes in R-2000 engines, NWA believes it is the first to operate the engine with all rocker boxes flooded.



Lake Central Airlines is conducting an evaluation of Shell TCP fuel additive on two Douglas DC-3 airplanes to determine its effectiveness in redu.ing premature spark plug removals.

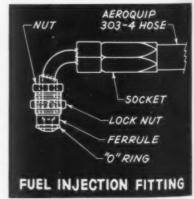
### TWA Solves Fuel Line Leakage Problem

Past problems of excessive maintenance and replacement of fuel injection lines on Wright BA and BD series engines on Lockheed Constellations are being solved by Trans World Airlines. TWA has undertaken a program to replace the conventional rigid steel line between the engine fireseal and cylinder with a flexible hose line.

Principal feature of the new installation is a special fitting designed by TWA engineers to combat leakage. This fitting (see drawing) is combined with a standard Aeroquip-manufactured single-wire braid, medium-pressure how and a conventional Bendix fuel injection nozzle.

The major problem experienced at TWA with the former rigid steel line was its inherent susceptibility to leakage at fittings, resulting from normal engine vibration. Another source for high replacement was "pin hole" leakage in the steel line, which was traced to a number of suspected causes, but which evaded an engineering fix.

The change to a flexible hose line installation in itself has eliminated the "pin hole" leak problem, and with the combination of line flexibility and the "O" ring seal, leakage at fittings due to vibration has virtually disappeared.



New fuel injection line installation features this special fitting developed by TWA engineers to combat leakage. Note "O" ring at end of ferrule for positive sealing, and lock nut to safety the installation.



New Watch-Master electronic unit for checking aircraft clocks adopted by Northwest Orient Airlines cuts test time from a week to three minutes. Manufactured by American Time Products, Inc., New York; sells for \$650.



crete apron are only a part of the facilities of the Magee Aircraft Company, operating at New Orleans Airport.

KEN MENARD AND R. W. MAGEE pose in front of one of the many ships that their company services daily.

"SOME YEARS AGO we foresaw the tremendous potential in the business aircraft industry and streamlined our operation to cater particularly to this phase of aviation. The rapid increase in the use of business aircraft has justified and rewarded our efforts. Looking back, we see that our most important decision was to operate strictly on a high quality basis. The excellent quality of Esso Products and their wide distribution and fine reputation were only a few of the many factors which guided our choice."

R. W. Magee, President, Magee Aircraft Company, Inc

DEPENDABLE ESSO AVIATION PRODUCTS offer high quality, backed by constant research and development at one of America's largest and finest petroleum laboratories. Flying executives, private plane owners, and commercial airline operators know they can depend on the products that carry the famous Esso Oval trade-mark.



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# **New Products**



Plastic Hose. A new plastic aircraft. hose and laminated pipe that is virtually unaffected by corrosive materials over a wide range of operating temperatures has been placed in pilot production by the Resistoflex Corp. The new products use DuPont Teflon as a basic material and are trade-named Fluoroflex-T.

First use of the new Resistoflex hose is seen in jet engine applications in synthetic oil and fuel systems. Wide use is also anticipated in guided missile manufacture for extremely corrosive fuels and oxidizing agents, and in aircraft hydraulic systems requiring non-corroding conduits.

The new hose, designated type R-500,

combines a Fluoroflex-T tubing, stainless steel armor braiding, and a Resistoflex-designed compression fitting. It is rated for operating temperatures of minus 100°F. to plus 450°F. and is said to have practically unlimited operating and shelf life.

The new laminated pipe consists of the Teflon compound reinforced with a Teflon-coated glass fabric. It is available in diameters from 1" to 4" with burst pressures ranging from 1600 psi for 1" pipe to 400 psi for the 4" size. Weight varies from 21 lbs./100 ft. for 1" pipe to 80 lbs./100 ft. for 4" diameter pipe.

Address: Resistoflex Corp., Dept.

Bolts. Production of six types of nealightweight, high-strength titanium aircraft bolts has been announced by Standard Pressed Steel Co. New bolts include flust head shear bolts, two types of internative arching tension bolts, external hex shear bolts, and external wrenching tension bolts Sizes range from No. 10½ to No. 10½ in 1/16" increments.

Address: Standard Pressed Steel Co. Dept. AAP, Jenkintown, Pa.



Ground Power. Motor Generator Corp. has introduced a new low-cost portable ground power unit for engine starting and ground servicing of DC-3, Lodestar, and Beechcraft aircraft and smaller types. The MGC unit is rated at 200 amperes,





MARCH 1, 1954

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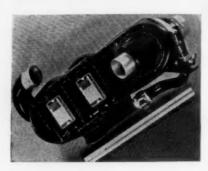
types.

peres,

28.5 volts d-c continuous duty, and is adaptable for aircraft with either 12- or 24-volt electrical systems.

The generator is mounted on a common shaft through a flexible coupling to a Wisconsin air-cooled engine. Added features include a weatherproof enclosure and four-wheel mounting.

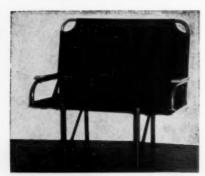
Address: Motor Generator Corp., Dept. AAP, West Water St., Troy, O.



Refrigeration. New type aircraft turbine refrigeration units which offer a 50% reduction in weight through integration of conventional parts have been introduced by the AiResearch Manufacturing Co. In the new AiResearch design, the cooling turbine inlet is attached directly to the heat exchanger, eliminating the need for interconnecting ducting and hardware.

The new turbines are produced with varying capacities. One unit weighs only 5.8 pounds, has an airflow rate of 10 pounds of air per minute, and provides 0.67 tons of refrigeration.

Address: AiResearch Manufacturing Co., Dept. AAP, Los Angeles, Calif.



High density seat from Burns Aero Seat Co. permits four-abreast seating in 40-passenger Philippine Air Lines DC-3's. Weighing only 7 lbs. per passenger, it is certified for 6 g or 9 g loads.

#### PHOTO CREDITS

Cover—Garrett Corp.; 15—Boeing; 16—North American, Convair; 17—McDon-nell; 18—Link; 19—Douglas; 20—Douglas, Curtiss-Wright; 21—Lockheed, North American; 22—Beech; 27—British Information Services; 29—Garrett Corp.; 37—Lockheed, Convair, Northrop; 42—Convair; 51—Percival Aircraft.



First production Convair R3Y-1 "Tradewind" shown after christening. Powered by four Allison T40 turboprops of more than 5500 hp each, the 80-ton transport is designed for speeds of over 350 mph. Wingspan is 145 feet, length 142 feet 6 inches, height (of tail, when on cradle) 51 feet 6 inches.

# **UAL Line Station Income Up 100%**

On its system of 79 stations, United Air Lines has 49 which it calls "line" stations.

These are so identified because they are not large enough to justify a passenger department.

Of this total of 49 line stations, 18 are at cities large enough to have sales offices uptown. The remaining 31 are not. They are akin to stations in the local service category.

The progress UAL has made in developing revenues from these line stations is of more than passing interest for several reasons. One is the claim frequently set forth by intermediate cities that trunk lines don't give them adequate service. The other is the drain the cost of serving smaller cities puts on the earnings of the big traffic points. The UAL example also is significant because this carrier has more of these line stations than any other, exceeding both Capital and Eastern in this respect.

Four years ago these line stations produced a little less than \$14 million annually, or 14% of the company's total revenue. In 1952 these stations produced \$29,445,000, approximately 18% of the company's total revenue.

This increase of more than 100% in revenues in four years was accomplished with practically no increase in service with the exception of a DC-6 occasionally at Boise, Hartford, and Des Moines.

Station costs have gone up, as all costs have gone up, but not excessively. Cost of operating these stations in 1952 was only 9.5% greater than the previous year.

The substantial increase in line station sales was accomplished by utilizing the spare time of station managers and agents for outside calls. UAL's records show that in 1952 station managers and agents made more than 25,000 outside sales calls. They wrote more

than 8000 sales letters, filled more than 350 speaking engagements, and placed more than 500 window displays in their communities.

This payoff in cross utilization of station personnel was engineered by grouping the line stations into their own package in transportation services. Direct supervisor of the group is Home J. Merchant with the title of manager of ground service. Merchant is one of UAL's old-timers with a wide background in traffic and sales. Before transferring to the transportation services division, he had been eastern regional sales manager.

Reservations for line stations are all handled at the airport by the station manager of ground services. But at 22 of the 49 stations no personnel are employed to answer telephones or to do any selling. Agents at these stations are employed to operate the station and the trips through the station. Yet these 22 stations average 150 telephone calls a day each. This represents an example of the cross utilization. When airplanes are in the station and are being serviced, the phones are not answered. When there are no airplanes in, the sales work is done.

There are 16 stations where only one person is employed to answer phones and they average 300 calls per day. Where volumes are greater, more employes are added for telephone answering purposes. Sacramento has seven and San Diego has nine, answering 800 to 900 calls a day.

A year ago in September, five UAL line stations were closed by CAB order. They were Santa Barbara, Monterey, Rock Springs, Eureka and Red Bluff. Even with these stations closed and still using their figures for 1952 to compare with 1953, UAL's line stations produced \$15,818,274 in the first six months of 1953 as compared with \$13,627,952 1952, an increase of 14.4%.

# complete COLLINS VHF, Omni, ILS

# in ONE PACKAGE installation



17M-1 VHF Transmitter — 50 kc channel spacing, 360 channels. Excellent stability.



51X VHF Communications Receiver — Companion to the 17M-1 Transmitter.



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51Z-1 Marker Beacon Receiver—Crystal controlled superheterodyne, 327A-1 Indicator shown.



Collins 37R-1 Omni Directional VHF Antenna 37J VHF Navigation Antenna 37P-2 Glide Slope Antenna



51V-2 Glide Slope Receiver — Developed expressly for airlines. Premium dependability.



Collins New Integrated Flight System — Greatly simplifies instrument flying.



51R-3 Navigation Receiver— The standard for Omni, ILS and VHF communications.

# New convenience and operating economy for Airlines and Corporations

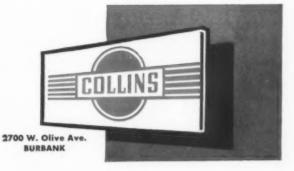
You can forget the time and cost consuming problems of coordinating different makes of avionic equipment when you put in an all-Collins installation. Collins ILS, Omni and VHF equipment is designed with interchangeable component parts, shock mounts and plug-ins. Maintenance, service and testing are greatly simplified. In design, reliability and performance Collins is recognized as the standard! Whether you're installing new equipment or replacing obsolete equipment in your present aircraft, put the advantages of a unified Collins package installation to work for you. Contact your nearest Collins Aviation Equipment Dealer.

FIRST in service to aviation . . .

# **COLLINS RADIO COMPANY**

Cedar Rapids, Iowa

11 W. 42nd St. NEW YORK 36 1930 Hi-Line Drive DALLAS 2





# AIRLINE COMMENTARY

• TRAFFIC • SALES • PUBLIC RELATIONS • by Eric Bramley

All the work that's been done on automatic reservations systems may soon be temporarily halted. Purpose of the delay, if Air Traffic Conference okays it, will be to explore the possibilities of using closed-circuit television in automatic reservations. Here's an example of how industrial TV might work: you ask a counter agent for reservation on a certain flight; she dials a couple of numbers, the availability sheet for the trip appears on her TV screen; she sells you a seat if one's open. ATC's automatic reservations subcommittee wants to shelve its other work for a three-months' look at this new development.

Another memo from a reader: "Recently I saw a woman passenger going to the lavatory after the seat belt sign came on for landing, and she was in there when the plane landed. This is a fine way to build a damage suit against an airline. Stewardesses aren't as alert as they use to be on keeping passengers in seats while the sign is on."

Bill Meyers, Allegheny Airlines' New York regional sales manager, gets credit for working the airline into the plot of "Lullaby," new Broadway play. He discovered that Mary Boland travels Scranton-New York (an AAA route) in the play and figured an AAA overnight bag would be a good prop. However, the company doesn't have such a bag, so Bill bought one at a store and had the airline's name painted on it in fluorescent letters. Play's director bought the idea, worked AAA into the plot. Picture of Mary Boland carrying the bag appeared in *Time* for February 15. Bill was worried because he spent \$10 for the bag, plus lettering. Dave Miller, vp-traffic and sales, tells us he won't question the expense account.

Airlines' Chicago teletype installation, used to speed interline reservations, has been so successful that a similar system will go into operation at New York in April, and later this year at Detroit, Denver, Atlanta and possibly Los Angeles. This Z-circuit, one of the recent big developments in the reservations field, not only speeds service but improves accuracy. Cost: \$150 per airline per month.

Scheduled airlines' excellent safety record paid off again last month, with announcements by insurance companies that air trip insurance rates were being reduced.

Continental Casualty Co., whose policies are handled by Airport Sales Corp., an affiliate of Parker & Co., announced a 20% cut on February 12. Minimum is

# Air Trip Insurance

now \$12,500 coverage for 50¢ (again former \$5,000 for 25¢) and you can be \$50,000 for \$2. Odds are thus 25,000 to that you'll complete your trip safely.

Associated Aviation Underwriters at the rate 20% and upped the limit from \$50,000 to \$62,500. Mutual of Omabai Tele-Trip Inc. vending machines of \$6,250 coverage for 25¢.

# Passenger Servia

A no-punches-pulled report on the passenger service of the foreign flag carriers has been prepared by Capt. James Walker, Pan American's passenger service supervisor.

Jimmy Walker, former general manager for Panagra in Lima and former chief pilot of PAA's Latin American Division, spent several months riding the competition's flights in all PAA divisions as an anonymous observer to see whether the often-made claim is true that foreign flag service is better than PAA's.

His conclusion: PAA's service is not only as good—it's better. He handed the

competition a few compliments, but als had numerous complaints. He claimed, for example, that at least one carrier mixes up first-class and tourist passengers on the same plane and serves them the same type meal.

We of course don't know whether a not his allegations are true, but they't bound to stir up a controversy. Anywa, it's encouraging to see that PAA has a passenger service supervisor who's willing to have his company stand up and be counted when it comes to taking care all customers.

# Sales, Traffic, Promotion

Capital Airlines' 1954 goal is \$50,819,000 gross revenue, up 11.5% over 1953's \$45,580,524. . . Air Cargo Inc. is issuing an excellent series of cargo loss-and-damage-prevention posters, using humorous cartoons. Twenty-six airlines are buying 50 to 200 copies of a poster each month at cost price. ACI's 220 trucking contractors are also displaying them.

United Air Lines' new eight-page folder informs prospective air travelers how to make reservations, pick up tickets, check baggage, etc. . . UAL is proposing extra fare for Stratocruiser staterooms on west coast flights (\$10 Los Angeles-Seattle) effective March 10, also plans \$3 extra charge on New York-Chicago "men only" Executive flights, effective March 16.

A rolling table, called a "Clipper Buffet," is being used on Pan American's President Special flights for hors d'oeuvres, cheese and liqueur services. Ken Parratt, Atlantic Division service manager, noticed a rolling buffet in a New York store, adapted it for use on planes. . . PAA's Latin American Division has a station (Colon, Panama) where 1953 cargo sales exceeded passenger revenue, \$550,000 to \$334,000.

Eastern Air Lines pooh-poohs news story claiming it was delaying distribution of 200,000 calendars bearing Arthur Godfrey's picture, because of Godfrey's alleged careless flying at Teterboro. Calendars were sent out before the first of the year. EAL also denies it pigeonholed a film

featuring Godfrey. Film is booked solid it claims. . . One airline (not in the Big Four) tell us it "lost" 600 blankets of its planes last year.

American Airlines is polling a selection of Washington customers on desirability of a 12:30 p.m. departure for DC-7 non-stop to Los Angeles (arriving 5 p.m. PST), scheduled to start in April First performance report on American Reservisor reveals that the automatic reservations equipment operated 99.8% of scheduled time in 1953. In 17,000 hous of service, only 8% of the two important type tubes were replaced.

PEOPLE: Ed Skinner, ex-EALer, is predding the significant of the start of the service o

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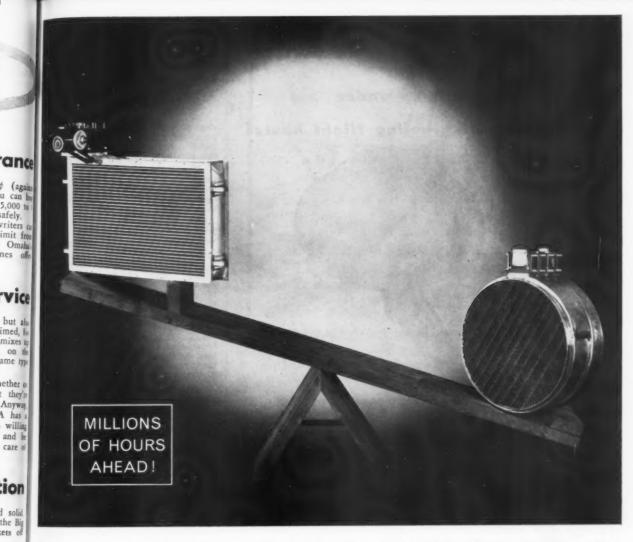
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PEOPLE: Ed Skinner, ex-EALer, is attracting airline business to his Pudding Stone Inn at Boonton, N. J.; tops for dining. . . . Capt. W. N. Pharr, American Airlines, has unusually good voice on public address system; chatter and useful information to passengers, without over doing it.

Bob Welch, Minneapolis sales rep for Northwest, recently named company's "salesman of the year" for '53. Sold 33 air travel plans. . . W. L. (Bill) Car, Braniff's Tulsa sales manager, now in third year of broadcasting 15-minute aviation news program over KAKC Sundays at 9 p. m.

PUBLICATIONS: "A New Kind of Airline," 16-page booklet telling story of Frontier Airlines. . . "The New Look at Lake Central Airlines," 18-page booklet stressing progress made under new management during past year.



# Equal performance at one-fourth the weight!

NEW AIRESEARCH OIL COOLER SAVES SEVENTY POUNDS OVER EARLY TYPE

AiResearch designed and produced the first lightweight heat transfer units for aircraft in 1939. Leadership in this field has been maintained by more than a half million hours of research and development, and by unparalleled experience - 500,000 units produced and almost three hundred million operating hours.

The unrelenting effort to reduce weight and size and to improve performance continues. One result: this new oil cooler which weighs only 22.5 lbs. It is seventy pounds lighter than original units of equal capacity.

AiResearch manufactures oil coolers which range from a capacity of below 100 BTU's to many thousand BTU's per minute. These units - and all other AiResearch heat exchangers - excel in efficiency in relation to size and weight.

If you have a heat transfer problem which requires high performance and efficiency from a small, lightweight unit, consult our engineeringmanufacturing team.

CONTROLS



POWER UNITS

MARCH 1, 1954

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An Aerotec P-904 Pressure Systich installed in the de-icing system of a Boeing Stratocraser performed without any functional failure during thousands of flight hours. Upon removal, no drift in the pressure setting had occurred, and the unit was still in excellent condition.

Frequently used in the de-icing or cabin-heater everems of larger aircraft, the Aerotec P-904 Type Pressure Switches are also utilized to control ground heating blowers as well as flap, landing-gear and earli-warning devices.

Among the aircraft using Aerotec P-904 Type Pressure

Among the aircraft using Aerotec P-904 Type Pressure Switches are Boeing B47 Stratojet and B50D Superfortress, Grumman 32F, Douglas C124C, North American AJ-1 and Chase 31 3B. More than 15,000 units are in service today.

Chase 173B. More than 15,000 units are in service today. The chaustive and conclusive tests of Spec MIL-E-5272 which the P-904 has successfully passed guarantee that Aerotec Automatic Controls will satisfy even the most rigorous specifications.

Aerotec Pressure Switches of various types are available for pressures ranging from 1.5''  $H_2O$  to 3,000 psi.

Let our qualified engineering help solve your automatic control problems in the aircraft field. Why not contact us on your pressure switch problems?

Project Engineers

#### THE THERMIX CORPORATION

GREENWICH, CONNECTICUT

(Offices in all principal aircraft centers)

Canadian Affiliates: T. C. CHOWN, LTD. Montreal 25, Quebec • Toronto S, Ontario

# THE AEROTEC CORPORATION

AIRCRAFT DIVISION

GREENWICH, CONNECTICUT

Designers and Manufacturers of Automatic Controls—Valves: Regulating, Relief and Check types—Pressure Switches: Gage, Altitude, Differential and Absolute Types—Float Switches: Top, bottom or side mounted—Single, Dual or Tandem.

# **People**

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#### MANUFACTURING

W. J. Ulrich has been elected a vice president of The Carborundin Company. Prior to his election, Ulric was the firm's senior sales representative in the Detroit area.

Fred F. Roehll has been named via president in charge of sales for Eutette Welding Alloys Corp. Prior to his premotion, Roehll was Eutectic's national sales manager.

W. M. Trigg has been named head Westinghouse Electric Corp.'s Materials Pilot Manufacturing Department a new metals development plant which Westinghouse is to build at Biairsville Pa.

Col. Paul H. Kemmer, USAF ret has joined Ryan Aeronautical Compan in the newly created post of chief designer in the firm's engineering division

Herbert K. Weiss, former chief of the U. S. Army's Weapon Systems Laboratory at Aberdeen, Maryland, has been named to head Northrop Aircrafts newly established Weapon Systems Analysis Department.

Dr. Charles J. Breitwiesser, previously director of engineering for P. R. Mallory & Co., Inc., is now in charge of Lear, Inc.'s General Development and Engineering Division as director of engineering.

Ben W. Badenoch has been promoted from west coast sales activities for Vickers, Inc., to aircraft products sales manager. Badenoch will shift his headquarters from El Segundo to Detroit.

Ray Condon, manager of Minneapolis-Honeywell Regulator Company's regional aeronautical office in Dayton, has been named to the newly created post of manager of military sales for the Aeronautical Division.

J. Gerald Mayer, senior partner in the law firm of Mayer, Rigby and Seeley, has been elected executive vice president of Micamold Radio Corpora-



Mayer



Snyder

#### GOVERNMENT

Earl W. Snyder has replaced W. M. Bartlett as director of aeronautics for the state of Oregon. Prior to joining Oregon's state board, Snyder was manager of the Eugene, Ore., airport department.

AMERICAN AVIATION

w. W. White, a vice president, direcn, and general manager of the Avia-on Department of Esso Export Corp., as accepted a one year appointment be staff director for Petroleum logistics with the Department of Dense in Washington.

#### **AIRLINES**

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Allen S. Aldridge has joined Central on, Ulrie Airlines as general traffic and sales present manager from Philippine Air Lines where he served as U. S. regional traffic and sales manager in San Francisco.

Eutech Irvin Lechliter has been appointed his pro-legal Counsel for Baniff International national Airways. Lechliter, a former State Deartment attorney, will join BNF's staff the Dallas headquarters.

> C. R. Springer is Trans World Air-lines' new operations director for the Atlantic Region, replacing W. H. Smiley, who is returning to flight status.

> Joel Peterson has been executive vice president of A. E. Ulmann & Associates.

Dr. L. H. Slotemaker, executive vice president of Foreign Relations for KLM Royal Dutch Airlines, has been awarded the honor of Commander in the Mexican order of the Aztec Eagle in connection with the opening of air service between Mexico and The Netherlands.

James W. Austin, vice president of Infic and sales for Capital Airlines, has heen re-elected chairman of the Advertising Committee of the Air Transport Association's Air Traffic Conference.

Louis J. Garcia has replaced Buell A Patterson as public relations director for Pan American-Grace Airways.

Frederick B. Butler has been ap-pointed manager of the San Francisco International Airport to succeed George M. Dixon who is returning to the oil business. Butler, previously a San Francisco fire commissioner, took over the \$14,700 a year post on February 16.



• R. E. Bowling, United Air Lines. Lead line mechanic, San Francisco. 20

• H. B. Brown, United Air Lines. Production engineer, San Francisco. 20

• H. V. Burton, United Air Lines.

MB aircraft inspector, San Francisco. 20 years.

• J. E. Moore, United Air Lines. Director, regulatory proceedings, Chicago, 20 years.

• L. C. Nichols, United Air Lines. Assistant foreman, San Francisco. 20 years.

• E. J. Smith, Jr., United Air Lines. Captain, New York. 20 years.

• Thomas M. Holdcraft, Eastern Air Lines. Captain, Miami. 20 years.

• Curtis W. Fitts, Eastern Air Lines. Captain, Miami. 20 years.

# YEARS OF SIMULATED FLIGHT

THEN







Pilot training gained a new ally when the first Link Trainers made their bow a quarter of a century ago. Instrument Flying Trainers such as the C-3 Link above, gave basic and refresher instruction to more than half a million pilots in World War II.

Like their predecessors, modern Links help to provide this nation with the world's most proficient pilots. New electronic giants such as the Link B-47B Flight Simulator are aiding Air Force pilots to master the instrument techniques of modern jet aircraft.

#### AND YET TO COME ...

The research and development staff of Link is currently at work on new projects that will fill the needs of future high speed flying ... and flying men . . . importantly as in the past and present.



MARCH 1, 1954

# Major Trunks Oppose Multi-Rate Plan

. A majority of the domestic trunk airlines answering CAB's request for their position on a proper service mail rate structure favor a "multi-element" type structure to replace the rate-by-class structure currently in effect.

But the majority (with the exception of Eastern Air Lines) consists of the smaller trunk carriers, as contrasted to American, United, and TWA, who either oppose or relegate the multi-

element idea to a secondary role.

Eleven of the 13 trunk carriers had responded to CAB's request as this issue went to press. Here are their positions:

• Eastern—Favors multi-element structure; suggests CAB set up committee to develop a formula;

• Colonial—Favors multi-element structure with a base transit rate graduated on a mileage basis;

• Capital—Favors multi-element idea as developed by an industry-CAB committee last year, which names a 33¢ per ton-mile line-haul rate to be supplemented by added terminal charges;

• Delta-C&S—Favors multi-element structure on much the same terms as

• Western—Suggests (1) a uniform rate for all carriers; (2) a handling

charge; and (3) standby charges for stations with little or no mail;

 Continental—Proposes same rate for all carriers between competitive points and present or higher rates for non-competitive segments;

 TWA—Favors a basic ton-mile rate for trunk-lines and a uniform rate for all letter mail. Believes it "unsound" to adopt multi-element technique;

• American—Favors present class structure because it is simple to administer, but does not oppose "some other structure" that may be developed that "would be equally fair and reasonable;"

 National—Believes present 45¢ rate is reasonable but hasn't had time to explore a multi-element idea which would "more directly reflect the value of service factor:"

of service factor;"

• Northeast—Favors no change in present structure;

• United—Favors a uniform tonmile service rate based on standard mileages for all domestic air mail carriers. Does not go for multi-element formula devised last year by the special committee (see Capital), but is not op-

posed to exploring the idea further.

Braniff and Northwest had not filed their statements at press-time.

#### CAB NEWS

#### AS OF NOW. .

Three airline cases involving intenational routes could wind up at the White House at the same time, The Colonial-Eastern Merger Case, in which CAB favors approval, has been returned to the White House by CAB, after a mond look by the Board at "illegal control" issues.

Next in line is the New York-Ball Case which twice before has been to warded unsuccessfully for Presidentia approval. Significantly, Eastern Air Lim and National Airlines, opponents in the Colonial case, are also interchange op ponents in the Balboa proceeding.

Then there is the Trans-Atlast Cargo Case in which CAB heard on argument last month. It could go the White House at any time. Once be fore applicants in the case were turnedown by the President, but he kept the case alive by urging reopened hearing to bring traffic data up to date.

In fact, there is an outside change that the Trans-Pacific Renewal Case may catch up with the above, although it is still awaiting an examiner's report At any rate, an insight into the Republican Administration's international aviation policy should be gained in the not-too-distant future based on the far-flung geographical nature of these cases.

# Court Blocks AA Mexico Non-Stop

The U. S. Court of Appeals has blocked, at least temporarily, a controversial CAB order which authorized American Airlines to compete with Air France for New York-Mexico City nonstop traffic. The Court (District of Columbia Circuit) stayed the effectiveness of the CAB order pending judicial review of the decision.

Eastern Air Lines and Pan American World Airways gained the stay order on arguments that the CAB action was taken without notice to them. The 3-2 decision, in which Board Members Lee and Adams dissented, has been commonly referred to as the "eightminute decision" in which EAL and PAA claim they learned of the action

on the same date they were advised of American's application.

At press-time, several alternatives were being considered by parties. There were reports that CAB may recall the case from the courts and decide it again, this time after notice to affected parties. Also, American's negotiations with Mexico for the same non-stop rights authorized by CAB and the U.S. State Department play a key role in future developments.

If American is unsuccessful with the Mexican Government, there is speculation that emergency action by CAB is not necessary. If AA is successful, then the CAB case would have to move.

#### CAB CALENDAR

Mar. 15—Hearing in Certificate Renewal Case—Ellis Air Lines and Alaska Coastal Airlines. Tentative. Docket 639 et al.

Mar. 16—Hearing in CUBANA Foreign Permit Modification Case (Havama-New York service), Washington, D. C. Docket 6376 et al.

Mar. 17—Hearing in North Central Airlines Segment 5 Renewal Case. Tentative. Docket 6432.

Apr. 19—Hearing in Denver Service Case (TWA, et al.). Civic Intervenors. Denver, Colo. Docket 1841 et al.

#### RECENT CAB DECISIONS

- Air America, Inc. denied reconsideration of CAB revocation order which is now effective.
- North Central Airlines directed to show cause why \$110,000 added back mail pay should not be fixed on temporary basis, pending establishment of final rates.
- British West Indian Airways.
  Limited, granted amended foreign ar carrier permit for service "between coterminals Trinidad, Jamaica, and Cayman Islands, intermediates Barbados.
  Antigua, St. Kitts, San Juan, Ciudad Trujillo, Port-au-Prince, and Jamaica.
  and terminal Miami."
- Local service airline industry authorized to experiment in surface mall carriage at special rate of 30c per tormile through this year.
- Central Airlines and Trans-Texts
   Airlines turned down on motions to expand Pioneer Merger Case to be considered as merger partners for Pioneer.

#### CAB MISCELLANY

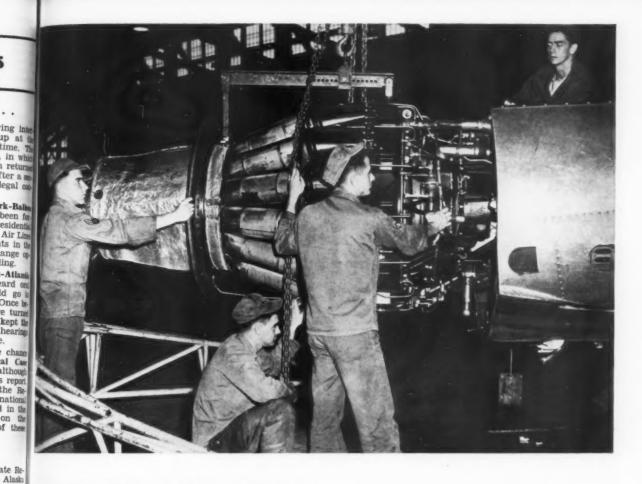
Pan American World Airways applied for certificate amendment to serve Damascus, Syria, on the segment of its foreign route between Beirut, Lebanon, and Baghdad, Iraq.

Eastern Air Lines filed complaint against Resort Airlines' new tariff which allows passengers to stop over at Miami for one-half the duration of all-expense tours to Caribbean.

American Air Export & Import Company, Capitol Airways, and Overseas National Airways want CAB to rescind its new "expedited procedure" for the Large Irregular Investigation.

Air France has filed necessary tariff provisions with CAB for a family plan excursion fare for New York-Mexico City service.

MAR



# Pulled for Time at 1200 hours

Two separate Air Force activities have demonstrated the increase in life and dependability of Allison Turbo-Jet engines.

An Allison-powered Lockheed T-33 Jet Trainer at Webb Air Force Base has flown 1200 hours without even minor repairs to the engine. Line maintenance by the men of the 3561st Maintenance Squadron backed up Allison engine design and manufacture to set this remarkable performance record.

An Allison-powered Lockheed F-80

Shooting Star flew 1200 hours in combat and combat-alert service in Korea without major overhaul. That flight time adds up to more than 600,000 miles under tough combat conditions. The record represents a splendid job on the part of the 6160th Maintenance Squadron at Itazuke AFB, Japan.

Records like these are made by planes and engines—but it's the men behind the planes who make them possible. A hearty salute to the 3561st and 6160th Maintenance Squadrons for these splendid achievements.

Allison

IVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA



World's most experienced designer and builder of aircraft turbine engines—135 and 171 Axial, 133 Centrifugal Turba-Jet Engines, T38 and T40 Turba-Prop Engines

MARCH 1, 1954

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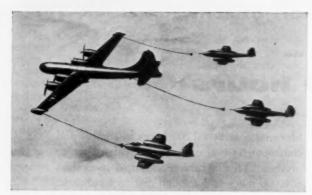
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First jet-to-jet refueling, accomplished with Probe and Drogue equipment built by Flight Refueling Inc.

# PROBE and DROGUE REFUELING



Automatic, light in weight, FR equipment requires no special crew member, permits simultaneous refueling of several fighters.



FR package equipment, quickly mounted in bomb bay, turns bombers into tankers, gives carrier-based fighters far greater range.

The latest, simplest, most adaptable in-flight refueling method is Flight Refueling's Probe and Drogue system perfected after twenty years of experiment and development.

Pioneering in refueling-which adds great range to the swiftness of jet flight-has been the singular task of the Flight Refueling organization. FR equipment made possible the first non-stop round-the-world flight, the first non-stop trans-Atlantic jet flight, the first refueled combat operation and now the first jet-to-jet aerial refueling.

To meet increased requirements, a new modern plant is nearing completion at Baltimore's huge Friendship Airport and will soon be producing FR Probe and Drogue equipment at a greatly accelerated rate.



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# NTERNATIONAL AVIATION

**Edited by Anthony Vandyk** 



#### INTERCOM

Which is the most economical airraft to operate between London and Zurich (490 miles): the Viscount, Ambassador, DC-3, or Viking? The answer is the DC-3, according to figmer recently published by British Euro-

They show in terms of cost per sat-mile the DC-3 is lowest at 3.5¢ (the Viscount is next best at 4.1¢); in number of passengers to break even the DC-3 has the lowest figure—14 (Viscount's is 25). The DC-3 has the lowest break-even load factor—46% (Viscount is next best with 53%), and the DC-3 has the lowest total cost per air-craft-mile—\$1.09 (Viscount's is \$1.93).

From the passenger standpoint of course the slow, unpressurized DC-3 cannot compete with the Viscount at an equal fare; the Viscount flies from London to Zurich in 2 hrs. 23 minutes against the DC-3's 3 hrs. 29 min.

Similar BEA figures for London-Glasgow route (340 miles) reveal that here none of the four types of aircraft could break even at 100% load factor! This is attributed to the high tax on gas for domestic operations in Britain. Since there is no tax on kerosene, the Viscount shows up least badly, but it still needs a 114% load factor to break even. If there were no fuel tax on gas, the DC-3 would come out better than the turboprop plane, breaking even at 91% load factor (28 passengers).

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The only major complaint that SABENA receives from the passengers on its international operations with rotorcraft is a complimentary one-that the Belgian airline is not providing enough helicopter service. However, unless cities which want to be served by rotorcraft are prepared to meet part of the costs, any major expansion of SABENA's present helicopter passenger services (1600 miles a day) is unlikely. The reason is very simple: with present equipment (Sikorsky S-55) and current fares (the same as for tourist travel in fixed-wing planes) the operation is losing some \$300,000 a year. Even with full loads the S-55 can bring in only 63 cents per mile; operating costs amount to about \$1 per mile. SABENA is indeed shouldering a considerable financial burden in its pioneering work in the international helicopter field from which the entire industry will benefit.

# **Radical New British Transport Designs**

Two "DC-3 replacement" designs are attracting considerable interest in Britain. One is the Percival P.87 (illustrated below and briefly described in American Aviation of September 28, 1953). The other is the English Electric Company's first venture in the transport field—an unusual design featuring an uprated Armstrong-Siddeley Double Mamba turboprop (developing probably more than 3500 hp) in the nose.

By having the coupled unit in the nose a great deal of weight is saved. Whereas the orthodox twin needs a large rudder and various sorts of structure beefing to compensate for engineout condition, the coupled unit needs nothing extra and has the added advantage of allowing the aircraft to cruissafely and economically on one unit. It is unlikely, however, that certification authorities will regard a Double-Mamba-powered plane as a twin-engine model in all respects.

The English Electric low-wing transport will gross about 30,000 pounds and will have a payload of up to 10,000 pounds.

It will accommodate 32 passengers. Structural weight will probably be as low as 10,000 pounds. Cruising speed will not be much over 200 mph. The landing gear will be fixed. The aircraft will be best suited for ranges of up to 600 miles but with reduced load could fly for 1000 miles.

The selling price, based on current British production costs, should be about \$250,000. English Electric sees the design as a replacement for the RAF's fleet of twin-engine Vickers Valetta transports as well as for DC-3's all over the world.

The Percival P.87 appears at first sight to be powered by turboprop engines and many people who saw a model of the plane at last year's Farnborough show wondered what would be the effect of the hot efflux on the propellers. It is now learned that the aircraft will feature gas producers (probably the new Napier Oryx) mounted in the wing with leading edge intakes. Working fluid is ducted internally to propeller-driving turbines aft of the rear spar.

With this system the producers can be two, four or even an odd number, to make up any power required. In the event of a producer failure, gas can be cross-fed to the other propeller drive, thereby eliminating asymmetric flight.

In this system, the propeller turbines extract most af the energy from the gas so that the efflux is relatively cool. The outlets around the propeller hubs will prove satisfactory with no more than protective cuffs on their blade roots, it is believed.

The combination of pusher propellers with low-speed efflux is expected to prove exceptionally quiet for passengers. With the low-pressure gas producer, high thermal efficiency is possible without flying high, so that short hauls can be operated without waste of fuel in long climbs.

POWER for Percival P.87 comes from gas producers, not turboprops.



MARCH I, 1954

# INTERNATIONAL AVIATION

#### MANUFACTURING

BRITAIN: Folland Aircraft Ltd. has offered NATO 20 Gnats with Bristol Orpheus engines and two Midges with Armstrong-Siddeley Vipers at a unit price of \$70,000 (an equipped figure, about half covering the engine, instruments, and operational gear). A lightweight fighter to compete with the Gnat has been designed by A. V. Roe Ltd. It is tailless.

FRANCE: SNCASE has completed French license production of the Vampire and its derivative the Mistral; several hundred of these de Havilland fighters were built. Company is now producing a version of the DH Sea Venom, known as the Aquilon, for the French navy.

SNCASO has completed the last of 45 SO 30 Bretagne twin-engine transports although the majority of them remain unsold. Only 11 have been ordered (or are in use) by airlines, whereas five are used by various government agencies. Plane will soon be demonstrated in India.

**ARGENTINA:** The IAME plant in Cordoba is building a roadable plane of 2200 pounds capable of a maximum air speed of 160 mph. It is about 15½ feet long and 5 feet high.

#### **AIRLINES**

BRITAIN: Furness, Withy & Co. Ltd. is to acquire a "substantial interest" in Airwork Ltd., the independent which plans to operate an all-cargo service between London, Montreal and New York. The Furness, Withy shipping company has offices in the U. S. and Canada, and these would presumably be used by Airwork, which at the moment has no North American offices.

Air Charters Ltd. is to operate 10 Avro Tudor transports which have been bought by its associate, Aviation Traders Ltd. The big four-engine planes—six Tudor I's and four stretched-fuselage Tudor IVB's—will be used on a projected "colonial coach" service between London and West Africa.

PERU: Rutas Aereas Peruanas S.A. is the name of a new carrier which plans to operate from Lima to the United States (Lima-Panama-Miami and Lima-Panama-Havana-

Miami-New York) and to various points in Peru, Chi and Brazil.

FRANCE: Aigle Azur, independent operator, is negotiating with the French government to use a Nord 2501 in Ind. China. If the twin-boom, Packet-like transport proves as factory the carrier would buy three more. It recently a quired two SNCASO 30 Bretagnes (with Palas auxiliary to units) and has an option for another two.

HOLLAND: KLM has introduced Convair 340 equipment on its West Indies network and at the same time has with drawn its DC-4's from this area. Six 340's have been as signed to the West Indies network.

#### MILITARY

FRANCE: French Air Force currently operates the following aircraft in Indo-China: 100 Grumman F8F Bearcat, 60 Douglas B-26's, 40 single-engine Grumman and Chance Vought naval planes, eight Convair PB4Y Privateers, 10 Douglas C-47's, 50 twin-engine Sierel and Dassault transports, 12 Fairchild C-119's (on loan from the USAF), 135 Morane 300's (Fieseler Storch), 15 Grumman amphibians, and 25 helicopters.

SPAIN: Spanish Air Force's jet training base is at Talvera de Real. First Lockheed T-33's were recently received. Four bases are to be expanded under the treaty with the U.S.: Torrejon de Ardoz, near Madrid; El Copero and Moron near Seville; and San Jurgo near Saragossa.

**SWITZERLAND:** Swiss Air Force is to receive an additional 100 Swiss license-built de Havilland Venoms. The initial Venom order for 150 planes is due to be completed at the end of 1955 and the new contract will stretch production into 1957.

BRITAIN: First Vickers Swift fighters were scheduled to enter service with RAF Fighter Command last month. Entry of the Hawker Hunter is reported to be badly delayed due to an unexpected snag involving the weapons system. ITALY: Italian Air Force is currently evaluating three trainers: Fiat G.49, Macchi B. 323, and Piaggio P.150.

**IRELAND:** First step toward modernizing the Irish Air Force was the recent ordering of a batch of Percival Provost trainers. Burmese Air Force has also ordered this trainer.



Miles Sparrowhawk converted to jet power is Britain's first jet lightplane. Designer F. G. Miles plans to build a light jet trainer as a private venture in his shops at Shoreham airport, Sussex.

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FIRST WITH ALL THESE FEATURES
IN FLIGHT ACCIDENT INSURANCE!

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- \* MEDICAL EXPENSE BENEFITS
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WITH NEW LOW RATES!

Continental's air trip insurance, sold at the nation's leading airports through booths and automatic dispensing machines, has always been a bargain in personal protection. Yet Continental, with the cooperation of the scheduled airlines and the airport operators, has always sought new ways to make this coverage an even better value.

Now, two factors combine to enable Continental to stabilize at the most economical level the costs of delivering this protection to the purchaser:

- (1) The excellent safety record of the nation's scheduled airlines.
- (2) Continental's continued emphasis on efficient and economical merchandising.

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THESE SAVINGS ARE PASSED ON TO YOU IN THE LOWEST RATES EVER OFFERED:

up to \$50,000 for Accidental Loss of Life, Limbs or Eyesight

up to \$2,500 for Hospital, Doctor and Surgical Expenses

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FOR A ROUND TRIP SCHEDULED AIRLINE JOURNEY

anywhere in the United States, Canada, Alaska, Hawaii, Mexico, Central America, the Bermudas, all islands in the Caribbean, Venezuela and Columbia.

CONTINENTAL CASUALTY COMPANY
AIRPORT SALES CORPORATION · AVIATION GENERAL AGENTS

MARCH 1, 1954



#### BULLETIN BOA

Undisplayed Advertising: \$1.00 per line, minimum charge \$4.00. Cash with order. Estimate 30 capital letters and spaces per line: 40 small lower-case letters and spaces per line. Add two lines if Box Number is included in lieu of advertiser's name and address. Displayed Advertising: \$15.00 per column inch. Space units up to

full pages accepted in this section for classified-type advertising Forms close three weeks preceding date of issue. Address all a respondence to Classified Advertising Department, America Aviation Publications, 1025 Vermont Ave., N. W., Washington, D. C.

# SUPER-92 over 200 mph for your DC-3

CAA approved R1830-Super-92 engines allow 700 HP normal cruise, better single engine—lower fuel and maintenance mileage costs with 20,000 extra miles between changes, with same overhaul intervals and costs as -92. Fully interchangeable with -92—same weight, mounts, cowl, lines, etc. Proven by thousands of hours of practical executive operation.

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#### **Technical Literature**

CHEMICAL SEALANTS: Story of four special new chemical sealants to meet special maintenance problems of both jet and reciprocal-engine aircraft is included in the new aviation products catalog published by Permatex Co., Inc., 1702-1720 Avenue Y, Brooklyn 35, N. Y.

ADHESIVE COATING SEALERS: An new 12-page booklet has been published by The Adhesives and Coatings Div., Minnesota Mining and Manufacturing Co., 423 Piquette Ave., Detroit 2, Mich., to acquaint users with the combination of 3M products, aircraft industry experience, and engineering services.

WIRE THREAD INSERTS: New miltrary standard sheets have been issued covering helical coil wire thread inserts (National Coarse and National Fine series) for aircraft applications. Available from Heli-Coil Corp., 1435 Shelter Rock Lane, Danbury, Conn.

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Ah, the Casbah! I've always wanted to see the well-publicized Casbah in Algiers but I never dreamed I would see it on a Jinx Falkenberg tour complete with guide, entourage, recording apparatus, and a group right out

of a sightseeing bus.

I've wandered around Arab sections quite a few times but I had never been to the biggest of them all, in Algiers.
Why I thought the one in Algiers was any more exciting than the others I'm sure I don't know because an Arab is an Arab and a native section is a native section and if you've seen one you've pretty well seen all.

Blame it on Hollywood and Charles Boyer for dreaming up the most fantastic and unrealistic ham idea of the Casbah that ever existed. The gap be-tween the movie version and the real thing is as big as the difference in atmosphere from the North Pole to

Panama any mid-day.

In a sense, I guess, there is only one Casbah and that's this big one in Algiers. The Arab quarters in other cities are usually called medinas but nobody seems to be sure of the origin of terminology. Suffice it to say, how-ever, that the Casbah and other similar places are native living quarters. We'd call most of them slums.

A particular characteristic, however, is that these sections are invariably walled and are fairly old. The walls were needed in the old days for pro-tection. In the intervening centuries the cities have surrounded and absorbed the walled areas and they have become crowded, dirty, jam-packed districts which are fascinating in photographs and plenty gosh-awful otherwise.

Tourist. On this Air France trip to Algiers there wasn't any choice but to go with one of the two organized tours. After we got through I was glad I hadn't wandered off by myself, as I have done everywhere else, because the Casbah is rough. But not in the way the movies say. I'd like to go through there again, with a French gendarme. but otherwise I'm lined up with the residents of Algiers who never go into the Casbah and consider it a civic disgrace.

Jinx Falkenberg had brought along a lot of recording equipment to capture the sounds, etc., of the Casbah. ducky! She was dressed in bright clothes, wore several pounds of glitter-ing costume jewelry, and obviously was delighted at being the center of attention in this glamorous parade through the slums of Algiers. I'm not sure this is the way to make friends and influence people overseas.

On a Hill. Anyway, there were about 20 in our party and a former U.S. Army officer now resident in Algiers was our guide. The Casbah is about a half-mile or so square on the side of a rather steep hill overlooking the harbor, and so we started at the top and ended up at the bottom where it adjoins the business section of the town.

No doubt about it, the Casbah is a photographer's paradise, as the accom-panying photos show. Veiled women, narrow passageways, blind alleys, and all the rest, are picturesque. But photographs miss a lot of things such as odors, and dirt. We were fortunate on our tour that cooler weather kept down the odors, which become pretty terrible when it's hot.

There are small shops in abundance. Meat hangs out in the open and what the flies don't eat up is sold to customers. You can buy Palmolive soap and Colgate's shaving cream and most other equally-fascinating U.S. products. There are no native handicraft shops for tourists

The Casbah is teeming with a population of perhaps 80,000 crowded into a small area with multitudes of dirty kids in an atmosphere that is quite depressing, as is every slum. There is no birth death registration and a census would be all but impossible.

Maisons Honnettes. Cafe Night spots? Beautiful girls? Nothing these. Of course there is a section in prostitution-I've never known of Arab quarter without one-but it dismal and depressing. Neighbors these houses have chalked "Main Honnette" (Honest House) on the doors to keep from being pestered b whorehouse patrons. We saw only couple of stray inmates of the hou and they were pretty pathetic, leftovers of outside civilization.

Dangerous? Yes, for sure. The Casbah isn't safe for an unarma westener. A gang of young Arabs cou surround you, strip you, and disappear in a couple of seconds. An Arab as a individual is a coward but in a game he can be treacherous.

It's impossible for the French w police the Casbah adequately with in hundreds of passageways and blim alleys and locked doors. You go in then at your own risk. There's nothing m mantic about it-it's just a packed di trict which houses an awful mass people and more than its quota thieves, murderers, castoffs, and goods.

As for Algiers itself, I've alwan wanted to see it—and still do. It seem that the Algerians are very proud of their cultural and industrial progress believe that visiting American should see something besides the Casbah. So with an all-too-tight scheduk to start with (the bane of all press trips) the local folks maneuvered our press party into a tedious, annoying and irritating trip at the end of the day to see, of all things, a girls' school of some sort far out on the outskirts of town.

The result was that we had no time for seeing the business section, no time for shopping, and were worn out by local hospitality which either never should have been foisted on us or proper provision should have been made by lengthening the schedule sufficiently.

Some day maybe I'll get to walk down the main street of Algiers and see what it's like.

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Through the camera lens . . .



The Casbah looks good.

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# **News at Deadline**

#### Harris Returns to Desk

Northwest Airlines president Harold R. Harris, who has been recuperating from serious illness in the Bahamas, has returned to his desk in New York. He is reported fully recovered.

#### **Douglas to Split Stock**

Douglas Aircraft Co. directors have recommended a 2-for-1 stock split and an increase in the quarterly dividend from \$1 to \$1.25. If stockholders approve the split, the dividend would become 62.5 cents a share.

#### Temco Buys 12 C-47's

Temco Aircraft Corp. has purchased a dozen dismantled Douglas CA7's from Gen. Chennault's CAT, Inc., and is planning to rebuild them for resale. Potter Aircraft Service of Burbank, Calif., is handling the preliminary work of assembling and ferrying the craft to Temco's Greenville, Tex., plant.

# District Airport Offices To Be Closed by CAA

House Appropriations Subcommittee hearings on CAA's money requests show that (1) CAA is planning to close all district airport offices, branches, and divisions; (2) members of the subcommittee are fearful that incorporation of Washington National Airport might result in "wild spending"; and (3) CAA expects to withdraw federal support of airports at Fairbanks and Anchorage, Alaska, without trying to regain previous expenditures.

F. B. Lee, CAA Administrator, said the district airport offices in the Office of Airports (cut from 40 to 20 in fiscal 1954) would be eliminated, along with divisions and branches in Washington and the regions. "We will carry out our functions here with a small staff located in regional head-quarters and in the Washington office."

Lee defended the plan to incorporate Washington National Airport by citing a similar recommendation made by the Hoover Commission and declaring "There are a lot of difficulties there which would be solved by the greater flexibility in fiscal and contracting procurement operations which we would have under a corporation."

Commerce Under Secretary Robert B. Murray revealed legislation transferring operation of Alaska's Fairbanks and Anchorage fields to the Territorial government or to the municipalities is now being drafted in addition to a bill to set up a business type budget and a revolving fund. He said federal support would be withdrawn as soon as transfer is made.

But subcommittee members asked why CAA had made no plan to recoup some of the government's expenditures when the transfer takes place, and Lee replied the Territory was financially incapable of investing substantial sums in the two fields. He estimated Anchorage's receipts for 1954 and 1955 at \$486,950 and \$594,720. Fairbank's income, he said, would be \$163,050 and \$216,280.

# McCarran Bill Hearings Postponed Until April

Senate Commerce Committee hearings on the McCarran aviation bill "S2647", originally scheduled for March 1, have been postponed until April 6. Senator McCarran, sponsor of the bill, requested the delay because of other commitments. As a result, hearings will be scheduled daily for an estimated two months.

# AA Nets \$13.4 Million On Record '53 Revenues

American Airlines netted \$13.4 million, or \$1.85 a share, on record revenues of \$208.3 million for 1953. compared with net earnings of \$12.5 million, or \$1.72 a share, on revenues of \$187.3 million for 1952.

Cost per revenue ton-mile flown dropped from 45 to 44.8 cents between 1952 and 1953, but operating expenses increased \$19.9 million to \$180.8 million. All traffic categories went up last year but the overall load factor, which reached 72.5% in 1952, dropped to 67.79.

67.7%

AA flew 103.7 million revenue miles last year vs. 89.4 million in 1952. Revenue passenger miles climbed from 2.9 billion in 1952 to 3.3 billion in 1953.

American, which has been paying 25 cent dividends semi-annually, is planning to pay quarterly in the future and the first such payment will be 15 cents a share March 20 to stock of record March 5. AA will also pay its quarterly dividend of 87.5 cents on the \$3.50 cumulative convertible preferred stock March 1 to stock of record February 25.

# 126-Plane Fleet to Be Maintained by CG

The U.S. Coast Guard is hoping to purchase three Martin 4-0-4's from either Eastern Air Lines or TWA in fiscal 1957 and add them to its existing two-plane RM-1 fleet. During the same year, the House Appropriations Committee hearings on the Treasury-Post Office bill indicate, the Coast Guard is planning also to take delivery of 15 Lockheed P2V Neptunes and five Douglas DC-6's (R6D's).

CG, which is currently operating 137 planes, expects to drop to 126 by June 30, 1955, and maintain that level for the next six years, merely replacing outdated aircraft with modern equipment. Mid-1960 should find the Coast Guard with 15 Neptunes, 18 Martin P5M Marlins, 38 Grumman UF air-sea rescue amphibians, 38 Sikorsky HO4S helicopters, five R6D's, five RM's, five JRB Beechcrafts, and two Consolidated OY's.

#### **CAA Names Beardslee**

John M. Beardslee, former director of CAA's Office of Federal Airways, has been named to the new CAA post of Assistant Administrator for Operations. He has been succeeded in his old job by J. H. Tippets, former deputy director.

Beardslee's new position includes the duties of executive assistant to the CAA Administrator, a job which became vacant when Morwick Ross joined Northrop Aircraft Co. Beardslee's job will be to represent CAA Administrator Fred B. Lee in technical programs in aviation safety, federal airways, and airports.

# Convairs, DC-4's Bought By Brazilian Airlines

Two Brazilian airlines have placed orders for additional aircraft through the Air Carrier Service Corp. in Washington.

• REAL, which already has four Convair 340's on order, has asked Air Carrier to obtain two more. Deliveries of the first batch will begin in June.

• Aerovias Brasil, currently operating three Douglas DC-4's between Miami and Rio de Janiero and 25 twinengine craft on its domestic routes, has purchased "several" more DC-4's plus spare engines and equipment. Delivery is expected in about 90 days.

### **PAL Faces Elimination** Of International Routes

Philippine Air Lines is now facing the possible elimination of its international routes and the consequent sale of its Douglas DC-6 and DC-6B's. By the end of the month, the Philippine government, a major PAL stockholder, will have to decide whether its budget can include a subsidy for the airline's international routes. PAL has reported a profit for the last three years but introduction of Pacific tourist services in April is expected to reduce income.

If the Philippine cabinet decides the economy could not stand the burden, PAL would be asked to emphasize its domestic and Southeast Asia service while foregoing other routes. PAL is also now in the position where it must place orders for new long-haul equipment for 1955 delivery to remain competitive with other lines, and this means the company would require addi-

tional money.

### **NATO** Forces to Get Canadian F-86's

Some of the NATO air forces on the Continent are slated to receive Canadair-built F-86 Sabres powered by General Electric J47 engines as the Royal Canadian Air Force in Europe becomes equipped with Avro Orendapowered Sabres. About 230 J47-powered F-86's are reported destined for the Continent.

Britain's Royal Air Force has al-ready received about 370 J47 Sabres from Canada under MDAP but the additional planes will replace Republic F-84's currently in use by such nations as Holland and Belgium. USAF is cooperating by supplying J47's and a year's supply of spares for each engine.

### 230 DME's in Fiscal '55

A CAA official reports that in fiscal 1955 about 230 of the ultimate 449 distance measuring equipment stations will be in operation. The routes covered by the 230 stations will include New York-Chicago, New York-Montreal, Chicago-Seattle, Chicago-San Francisco, Washington-Miami, Chicago-New Orleans, and Washington-Los Angeles (via Atlanta and Dallas).

# Atlantic Fares Approved

IATA resolutions calling for slight increases in North Atlantic fares were approved by CAB but the agency said it was gravely concerned over the "high level" of the new rates which become effective April 1. Majority said future increases of the same type would be viewed skeptically.

### Canadair to Build **RCAF Britannias**

Canadair Ltd. is to produce in quantity a maritime version of the Bristol Britannia as a replacement for the RCAF'S Avro Lancasters. The Canadian governments contract with the Montreal company will reportedly be worth \$85 million and will involve the production of 50 aircraft powered with Wright Turbo-Compound engines.

# PO Holds to 'Low-Rate' Policy for Air Mail

Caught in the middle of a twopronged Post Office move, four regional trunk carriers faced loss of substantial mail volume to the Big Four, Northwest and National, as this issue went

to press.

Braniff, Capital, Delta and Western, with 53¢ ton-mile service mail pay, couldn't get lower CAB rates because of PO objections, and couldn't get the PO to assure that its new policy of shipping via the low-rate (45¢) carriers wouldn't be implemented until rate differences were settled.

At prehearing conference before CAB Examiner William J. Madden, the PO turned down rate offers of CAB's staff which were concurred in by the four airlines. The PO also re-fused offers to hold immediate hearings except on condition they could resume hearings at a later date.

Fred Batrus, PO attorney, said the new policy could become effective "momentarily," drawing criticism from Madden, who termed the PO's position inconsistent. Hearings were tentatively scheduled to begin Mar. 2.

### **USAF Plans 13 New** Air Bases in U. S.

An Air Force base construction program calling for 13 additional installations in this country will go before Congress soon, in order to provide more bases for the expanding AF as it expands to 137 wings by June, 1957.

The AF has listed areas for the bases (five of which were formerly military air installations and have been scheduled for reactivation) as: Bismarck. N. D., airport; Blytheville municipal airport, Ark.; Clinton-Sherman airport. Okla.; Columbus AFB, Miss.; Fargo. N. D., area; Glasgow, Mont., area; K. I. Sawyer airport, Marquette, Mich.; Klamath Falls, Ore., area; Morefield Mission, Tex.; Myrtle Beach, S. C., municipal airport; San Diego, Calif., area; Seymour Johnson, N. C., municipal airport; and the Traverse City, Mich., area.

# Progress Payments Will Continue, Wilson Says

Defense Department has issued interim memorandum on progress par ments to defense contractors declaring in effect, that the program will be con tinued as far as long lead time item (including aircraft) are concerned, b that it will rarely be necessary to make advance payment in excess of 90% direct labor and material costs or 75 of the total cost.

Defense Secretary C. E. Wilson notice to the service secretaries aid however, that contract provisions for progress payments should supplement private financing, including guarantee loans, "in amounts reasonably necessar

for contract performance."

### CAB Establishes Industry Mobilization Committee

CAB has set up an Industry Ad visory Committee on Aviation Mobiliza tion to deal with the problems of civi airline operation in case of emergence The new group, according to CAl Chairman Chan Gurney, was organized "to advise the Board concerning the questions of mobilization of the air transport industry in wartime, including the War Air Service Pattern, the allocation of civil transport aircraft in the event of war, and related matters."

Chairman will be Joseph H. Fitz Gerald, director of CAB's Air Open tions Bureau. Members will include representatives of the airlines, Commerce and Defense Departments.

### **British to Aid Luftag**

Germany's forthcoming airline and two British carriers, BEA and BOAC. have agreed on a policy of close cooperation after a meeting in Cologne. Germany. Officials of Luftag joined BEA's Peter G. Masefield and BOAC's Sir Miles Thomas in setting up as permanent committee to work together in the future.

### Mexican Tax Halted

A temporary injunction has been obtained by six non-Mexican airlines in a a Mexican court prohibiting that nation from imposing an 8% tax on passenger and 4% on freight on these carriers The court ruled, however, that TACA American, Cubana, KLM, Air France, and PAA (plus Trans-Canada and Canadian Pacific, which did not join , in the injunction request) would have to collect and deposit the tax money in a Mexican bank until the case is ultimately decided. Mexican lines are exempt from the tax.

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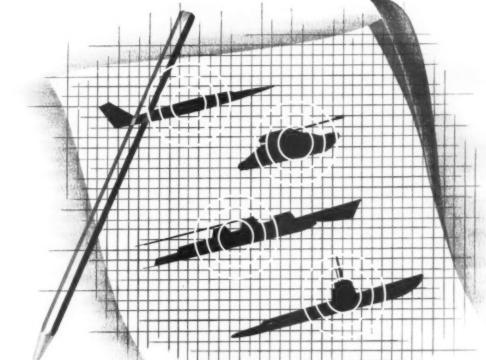
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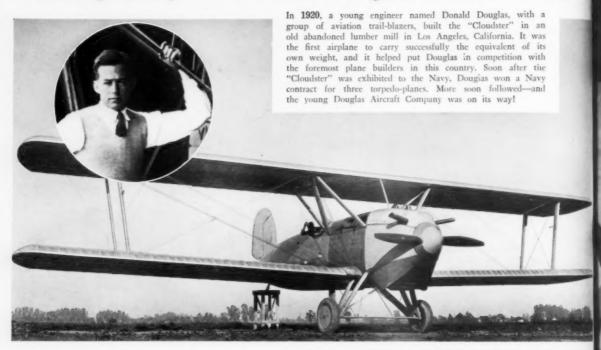




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